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ABSTRACT

The purpose of this report is to help the people and governments of Canada face the financial problems of university development over the next decade. The report deals with: (1) enrollment projections of Canada's universities and colleges: (2) projection of operating expenditures; (3) projection of capital expenditures; (4) estimated total expenditures and sources of income; (5) federal support of research in the colleges and universities; (6) rationalization of university activities: achievements and aspirations; and (7) organization at the federal level to coordinate the total research and development effort supported by the federal government. (AF)

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FINANCING HIGHER EDUCATION IN CANADA

NO. 7

FEDERAL SUPPORT OF UNIVERSITIES AND COLLEGES OF CANADA

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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W. J. WAINES

Association of Universities and Colleges
of Canada

1970

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The purpose of this report is to help the people and the governments of Canada face up to the financial problems of university development over the next decade. We believe that there is general recognition of the importance of developing to the full the intellectual resources of our people. In this country, as elsewhere, this recognition has been connected with new concern for economic growth and a new assessment of the dependence of that growth on the supply of highly intelligent, highly trained, and highly educated people. But if our future wealth depends on education so that expenditure on education is properly looked on as investment likely to yield a high economic return, our growing wealth makes it easier to accept the cost of education without reference to that economic return. We must not fall into the totalitarian way of thinking of people merely as instruments, to be developed as the community needs them; rather, must we think of the community as an instrument for developing the talents of individuals. In the long run we may achieve even greater wealth by this greater concern for the individual; we will surely come nearer to achieving the "good life".

V.W. Bladen, *et al*, Financing
Higher Education in Canada, 1965.

Federal Support of Canadian Universities and Colleges (1)

I. INTRODUCTION

The Association of Universities and Colleges of Canada (AUCC) is a voluntary association of sixty-three institutions of higher education in Canada. It is successor to the National Conference of Canadian Universities and Colleges and the Canadian Universities Foundation. Operating revenues come exclusively from membership fees. Its objective is to foster the development of higher education in Canada. The Association is Canada-wide in scope and interest and, while recognizing that education is a provincial responsibility, has always taken the view that, since universities and colleges serve national as well as regional and local purposes, especially in research and cultural development, the Government of Canada also has a concern for their well-being. This view has been stated and reiterated on a number of occasions in the past.

The crucial role of the universities and colleges in the development of Canadian society - intellectual, cultural, social and economic - has been pointed out many times and concern has been strongly expressed that the universities and colleges have not received sufficient financial support to enable them to discharge their responsibilities adequately. The Massey Commission in 1951 recognized a crisis of quality. For years, the Commission pointed out, the universities "have been handicapped by inadequate income; now they face financial crisis...The quality of the work done has been impaired, the composition of the student body has been adversely affected."(2) The Gordon

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(1) The Community Colleges are not included in this study.

(2) Royal Commission on National Development in the Arts, Letters, and Sciences, Report, (Ottawa: King's Printer, 1951), p. 143.

Commission in 1957 stressed the importance of maintaining the universities "in a healthy and vigourous condition" because "the functions of the universities touch every facet of our society" whether intellectual, cultural, social,or material.(3)

The Economic Council of Canada has repeatedly called public attention to education, research and training as crucially important factors in economic growth, social change and cultural development. In the Second Annual Review, the Council recommended "that the advancement of education at all levels be given a very high place in public policy, and that investment in education be accorded the highest rank in the scale of priorities."(4)

The Association of Universities and Colleges of Canada and its predecessor organizations have consistently pressed for federal support of universities and colleges. In 1950, the National Conference of Canadian Universities proposed to the Massey Commission the introduction of federal per capita grants.

By 1955, it was apparent that a new crisis would soon face the universities in view of the rapid increase in the demand for places. In that year, Dr. E.F. Sheffield, then Director, Education Division, Dominion Bureau of Statistics, and later to become Director of Research for the Canadian Universities Foundation, prepared the first national projection of full-time enrolment. This projection was revised upward several times to 1963. The rate of increase in full-time enrolment projected by Dr. Sheffield was startling and led the National Conference of Canadian Universities to organize a symposium in 1955 on The Expansion of Enrolment, 1955-56, a special conference in 1956 on The Crisis in Higher Education and another conference in 1961 on The New Era in Higher Education.

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(3) Royal Commission on Canada's Economic Prospects, Final Report, (Ottawa: Queen's Printer, 1957) p.452

(4) Economic Council of Canada, Second Annual Review, Towards Sustained and Balanced Economic Growth, (Ottawa:Queen's Printer, 1965), p. 171

While it was becoming very clear by 1964 that the demand for university places would increase rapidly over the next several decades, the financial implications of the increase had not been assessed. The Canadian Universities Foundation, therefore, appointed the Commission on the Financing of Higher Education in Canada (the Bladen Commission) (5) to make an estimate of the financial needs of the Canadian universities and to recommend means of supplying them. The Commission reported in June, 1965.

This report brought home for the first time to the academic community, to governments and to the public the magnitude of the financial (operating and capital) implications of the growth of enrolments in universities and colleges. The Commission figures were startling and, as it turned out, too low. Nevertheless, the findings of the Commission marked a turning point in federal support of university finance. "What must be made clear" stated the Commissioners, "is that failure to provide for expenditure on the scale indicated...would mean for the universities either a policy of exclusion by steadily rising entrance requirements or a deterioration in the quality of education, or both. To restrict numbers would be to reverse the trend to greater educational opportunity. To allow quality to deteriorate would erode the reality of the apparent increase in opportunity." (6)

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(5) V.W. Bladen, et al, Financing Higher Education in Canada, being the Report of a Commission to the Association of Universities and Colleges of Canada, University of Toronto Press, 1965. (Hereafter referred to as the Bladen Commission Report).

(6) Op. cit., p. 21.

The Bladen Commission reported in June 1965. In October 1965, the Association made a submission to the Government of Canada and to the governments of the provinces endorsing the Commission's recommendations but with some elaboration of the proposals respecting scholarships and bursaries and equalization grants. In response to these representations, the Prime Minister of Canada remarked that the federal government recognized the Bladen estimates as being realistic and further stated that "as the needs increase, it is more and more difficult for all provinces to meet them in ways that are within their financial capacity. In order that the opportunities for higher education should be adequately improved for all Canadians, in all parts of the country, federal financing must be brought to the assistance of the provinces. My government has already accepted this federal responsibility."(7) The Prime Minister stated that he would, in the very near future, propose a federal-provincial conference to consider the universities' proposals.

By letter to the Executive Director on January 20th, 1966, the Prime Minister informed AUCC that "circumstances have not permitted an early federal-provincial conference...and the federal government at the suggestion of the provinces has made a decision concerning interim arrangements for the academic year 1966-67 without waiting for a general conference." The federal decision was to increase the per capita grant to an average of $5.00 per capita (from $2.00 per capita) to consist of a basic grant of about $4.30 and a supplementary grant to the universities in those provinces that take a higher proportion of out-of-province students. The government also agreed that the distribution amongst institutions should be in accordance with the weighting formula proposed by AUCC.

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(7) Statement by Prime Minister Pearson, October 14, 1965.

In expectation of a federal-provincial conference to be held in June, 1966,(8) the views of AUCC were again placed before the Prime Minister of Canada and the provincial premiers by the Executive Director at the request of the Board of Directors, by letter of May 30, 1966. AUCC recognized that much of the time of the conference would necessarily be devoted to attempting to reconcile provincial responsibility and federal concern for higher education and with identifying the respective roles of provincial and federal authorities for forward planning in order to ensure that the needs of the whole Canadian society are met. Bearing this in mind, AUCC reasserted its support of the findings of the Bladen report already endorsed.

The hope was expressed by AUCC that the per capita grant would be raised to $7.00 per capita in 1967/68, apart from the out-of-province allowance. It was pointed out that the situation respecting funds for capital purposes was critical in view of the explosion in numbers of students and in knowledge. AUCC urged that the government take the action recommended by the Bladen Commission respecting support of research with the suggestion that the rate of increase in research appropriations be re-assessed as new studies indicated that the appropriate rate of increase was closer to 50 per cent than the 20 per cent suggested by the Commission.

The importance of research and graduate study was again emphasized:

> Research and graduate study go together and both are essential to the production of high level manpower. While the social and economic life of the country is rapidly becoming more complex, and, as a consequence, demanding more and more kinds of highly skilled and educated manpower, not all of the provinces are in a position to support post-graduate education for all the advanced skills they require for development. It is for this reason that there will continue to be a need

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(8) This Conference was actually held in October, 1966.

> for high-level manpower exchange from province to province and region across Canada. This in turn calls for self-selection of areas of special strength in graduate study, as in research, among universities on a Canada-wide basis. Highly educated manpower is highly mobile, nationally and internationally; it can be attracted, or lost, to Canada, depending on the adequacy of Canada-wide policy, and for this reason if for no other, the federal government must be specially concerned about it. How that concern can and should be best expressed is a political decision, but with profound implications for universities. (9)

This communication to the Prime Minister also reiterated endorsement of formula financing, based on studies of the real cost differentials at the various levels and in the various areas of study. The recommendation that the special fiscal needs of the less wealthy provinces should be dealt with by general equalization grants and the recommendation that a comprehensive national programme of student aid be developed were also reiterated.

It will be noted that AUCC was at this time, expecting decisions at the federal-provincial conference with respect to direct grants to the universities to support operating, capital and research expenditures. But the statement of the Prime Minister on October 24th, 1966 to the federal-provincial meeting then in session proposed a radical departure from the existing methods of supporting universities. In essence, the government proposed to assist the provinces in financing the rising costs of post-secondary education - both operating and capital - by a special arrangement of fiscal transfer. This proposal was subsequently spelled out in the Federal-Provincial Fiscal Arrangements Act, 1967, and the regulations.

The terms of the legislation are well known and need not be stated here. However, it should be emphasized that as a consequence the universities were no longer to receive direct federal support of their operating expenditures and were not to receive direct federal capital support, except from the Health Resources Fund for medical education and research. The amount of the fiscal transfer from the federal treasury, while calculated as a proportion of allowable post-secondary education costs, both university and non-university, could be used by the provinces for any purpose whatsoever. As the Prime Minister remarked in his statement of October 24th, 1966:

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(9) The Executive Director to the Prime Minister, May 30, 1966.

> This does not mean that the federal government can or should impose on the provinces any views as to how much money should be spent for education or in what way it should be applied. Those are matters for provincial decision. The federal government wishes by its actions to recognize the needs and priorities of the provinces. It is for provincial governments to take the action that, within their fields of jurisdiction, they think most appropriate and desirable. (10)

This left the universities and colleges with only one source of public support for operating and capital purposes - the provincial governments. (11)

However, in the same statement, the Prime Minister proclaimed a federal constitutional jurisdiction in the areas of cultural affairs and research. He stated with respect to cultural affairs: "In relation to 'education' in Canada it has been suggested that the provincial jurisdiction over it excludes any federal activity in the realm of cultural affairs. The federal government believes such a definition is not valid." He went on to remark with respect to research:

> Nor does the federal government agree that it is precluded from concerning itself with research by reason of the provincial responsibility for

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(10) Opening Statement by the Right Honourable L.B. Pearson, Prime Minister of Canada, Report of the Federal-Provincial Conference, October 24-28, 1966 (Ottawa: Queen's Printer, 1968), p. 8.

(11) Op. cit., p. 19. The Prime Minister's statement also seemed to imply that training of "low level" manpower was not to be considered education whereas the training of "high level" manpower was to be so considered.

> "education", or alternatively that it must limit its support according to subject matter in relation to areas of federal and provincial jurisdiction. In our view research, as the means by which we expand the frontier of knowledge, is today one of the most important factors in the economic and social growth of any modern political society. The restriction of federal aid to research to subject matters that are within federal legislative jurisdiction would frustrate the purposes of the scientific spirit... Failure by the federal government to play its full share in such a national task could only mean that Canada's ability to take part in the undertakings of today which are shaping the world of tomorrow would be seriously impaired. (12)

Finally, the Prime Minister stated with respect to financial aid to students: "...the federal government does not agree that it is in any way contrary to the spirit, let alone to the law, of our constitution nor is it necessarily any threat to provincial policies with regard to education for it to make payments to Canadian citizens through scholarships or bursaries."(13)

The reaction of the Board of Directors of AUCC and of the executive heads of the member institutions is well expressed in the AUCC press release of October 26th, 1966:

> We appreciate the evidence in the Prime Minister's statement that the Federal Government is deeply concerned with the magnitude of these issues and the urgency of establishing practical measures for meeting them.
>
> Nevertheless, the proposal contained in the Prime Minister's statement is such a radical departure from the present methods of dealing with university needs, and leaves unclear and confused so many of the elements of the intricate problems of adequate support of the universities, and of other forms of post-secondary education, that the AUCC finds itself unable to make a considered judgment of the proposal on such short notice. We cannot at this moment see

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(12) Op. cit., pp. 19-20.
(13) Ibid. p. 20.

> why these two problems should be dealt with together, nor do we see how Federal-Provincial decisions on the proposal can be matured and made in time for the universities, in consultation with their provincial governments, to incorporate the results in the university operating budgets and capital development planning for 1967-68 which must be fixed almost immediately.
>
> We therefore urge that, as an interim measure, the Federal-Provincial Conference adopt the recommendations contained in our submission of October 14, 1965 based on the recommendations of the Bladen Commission, respecting operating support for the Canadian universities. Because of the present urgent need for capital development, we recommend, in lieu of the capital recommendations of the Bladen submission, the provision of a fund, similar to the Health Resources Fund, of three hundred million dollars to be expended over the next two years.

This new policy of federal support for education enunciated by the Prime Minister in October 1966 led to a reorientation of the representations made subsequently by AUCC to the federal government. The federal-provincial arrangement being open-ended in the sense that as provincial expenditures for post-secondary education increased, the amount of the federal share would increase proportionately, AUCC turned its attention to the definition of post-secondary education and allowable costs. In this connection, the AUCC Committee on university financing collaborated closely with officers of the Department of the Secretary of State in formulating the regulations under the Act. In addition to this, AUCC turned its attention to pressing for enlarged support of research in the universities and colleges.

The following resolution was approved at the annual meeting of AUCC on October 28th, 1966, and transmitted by the Board of Directors to the Prime Minister:

> Resolved that the Association of Universities and Colleges of Canada reaffirm the urgent and immediate need for enlarged support of research in the universities to enable Canada to play its proper part among the nations of the world.
>
> The Association strongly supports the Prime Minister's statement that "Research as a means by which we expand the frontier of knowledge is today one of the most important factors in the economic and social growth of any modern political society". It also fully agrees with the Prime Minister that "failure by the Federal Government to play its full share in such a national task could only mean that Canada's ability to take part in the undertakings of today which are shaping the world of tomorrow would be seriously impaired".
>
> It is therefore further resolved that the Federal Government be urgently requested to fully exercise its rights and responsibilities in this vital area of national concern.
>
> To this end, the Association respectfully once again urgently commends to the Government the AUCC submissions relating to the support of research that it has made on previous occasions requiring that each of the principal research councils of Canada, namely the Canada Council, National Research Council and Medical Research Council, be given funds sufficient both in initial amounts and in annual growth rates to satisfy adequately the needs of the country.
>
> In particular, we would urge that the Federal Government should now accept as a matter of principle the need to pay the universities an overhead grant of 30% of the research grant as recommended by the Bladen Commission and by the AUCC in its submission to the Prime Minister of October, 1965. Such payment is necessary to ensure that the indirect costs to the universities of research provided from federal sources be not made a charge to the provinces.

The Board of Directors of AUCC, at its meeting on January 19th and 20th, 1967, gave further consideration to the implications of the Prime Minister's statement of October, 1966, and to the change in circumstances, with respect to the federal involvement in higher education, research and cultural activity, consequent upon the federal-provincial conference.

These considerations were conveyed to the Prime Minister in a letter from the Executive Director, dated February 9, 1967. This letter is quoted in part herewith.

> It is apparent to us that if the Federal Government intends to continue to provide research grants through the National Research Council, the Medical Research Council, the Canada Council, and other federal agencies direct to the universities, it must also make provision for the indirect costs of that research if it wants to avoid claims by the provinces that the indirect costs of such research grants constitute a charge against university budgets and consequently against provincial revenues over which they have no control.
>
> It has now become urgently necessary to reassure the provinces on this matter, and, with this in mind, the AUCC is particularly concerned to obtain a concerted government research policy.... It is not yet clear whose responsibility it is to concert government policy in research matters.
>
> ....
>
> It would seem to us, therefore, that there is urgent need for Federal Government coordination of research policy (including both the pure and applied sciences on the one hand, and the humanities and social sciences on the other).
>
> It seems to us that there is an equally urgent need to protect the position which you outlined in October by assuring both the universities and the provinces that the Federal Government is willing as a part of its granting policies to pay for the indirect costs of research.
>
> The alternative to adopting this policy is to transfer the responsibility for research (and the funds to support it) also to the provinces. It is because we feel very strongly that the Federal Government should not abdicate this field that we urge the only course of action which we feel can protect the Federal Government's freedom of action in it.

Further representations on support of research, including a supplement for overhead, and on the necessity of establishing, within the federal government, an organism which will allow the universities to have access to a single body representing the major federal research granting agencies and advisory bodies were made to the Macdonald Study Group on the rôle of the federal government in support of research in Canadian universities.

Institutions of higher education have two primary functions: teaching and research. These functions are concerned with knowledge for its own sake, but they are also concerned with the scientific, technological, economic, social and cultural development of all the communities which they serve, whether local, provincial, regional, national or international.

Canadian universities, conscious of these teaching and research responsibilities, are trying to find ways by which they can relate to all the authorities which have responsibilities for economic, social and cultural development and for international cooperation. They are concerned especially about the intimate relationship between expensive research and high-level manpower training. They are conscious of their responsibility for developing international studies, for maintaining contact with universities throughout the world, and also for assisting in programmes of aid to developing countries. Even more important, they are conscious of the importance of the creativity and leadership which educated people can give society and of the critical appraisal which independent scholarship and high intellectual achievement can bring to bear on all aspects of life and living.

The Association recognizes that there is also a federal concern for these matters and that, in addition, federal concern extends to facilitating mobility of students and graduates, to particular areas such as research, the education of high-level manpower, the amelioration of regional educational disparities and to higher education in its external relations.

II. Enrolment Projections of Universities and Colleges of Canada

In the previous section, the position AUCC had taken from time to time with respect to federal support of higher education in Canada, was indicated. We now turn to an examination of the estimates of the numbers of students for whom the universities should be planning to 1975/76 and in 1980/81 as reflected in the enrolment projections.

The natural increase in the population supplemented by a high rate of immigration, has doubled the population and more than doubled the labour force since 1931. The education system, particularly higher education, has grown even faster and has exceeded the rate of growth in other industrial countries. It will be recalled that we started this period of growth from a relatively low level as compared with some other countries. Continued growth is necessary to provide the highly qualified manpower required by the development of the society and the economy.

A projection recently completed in the Department of Manpower and Immigration "suggests that the labour force will be more than 12% larger in 1975 than today, and more than 40% greater than in 1961. Moreover, it is evident that the trends which have been in progress for some decades of a relative increase in white-collar and service occupations and a decrease in the primary occupations will continue. Professional and technical occupations are projected to increase from 10% in 1961 to more than 15% in 1975 on either of two alternative projections which have been made. Moreover, the changing occupational composition of the labour force will require a larger number of people with university education, even if the average level of education in each occupation does not change. If the projections... are multiplied by the levels of education in each major occupation group which obtained in 1961 the requirement for university graduates can provisionally be projected to double from 1961 to 1975, which represents an increase from 4.4% of the labour force to at least 6%."(1)

The Bladen Commission chose the 1963 Sheffield projection(2) as the best available estimate of rising enrolments and stated its belief that expansion on this scale would be a proper objective. In the event, this projection as in the case of all later projections, turned out to be too low because of an under-estimation of the rapidity with which participation rates would rise. In 1967, the Economic Council of Canada published Enrolment in Schools and Universities 1951/52 to 1975/76. This study was revised and the revision published in January, 1970.(3) We base our cost projections on this enrolment projection.

The Economic Council explained that "University enrolment includes enrolment as of December 1st in all degree-granting institutions and affiliated colleges, in accord with the DBS definition of 'university'. It also includes students enrolled in university transfer courses of junior colleges. For the projection period, teachers' college enrolment has been included with university enrolment."(4) The enrolment figure for 1968/69 is preliminary and includes teachers' college enrolment. As to methodology, it is explained that "the projections are numerically determined by the population of school enrolment age, enrolment ratios and the proportion of each age group that is expected to be enrolled. But each of these factors and particularly the latter, can in turn be affected by a wide variety of underlying variables... The levels that will ultimately be attained will depend on such matters as social attitudes and government policies towards education, economic conditions and income levels to name only a few... It has been assumed that the economy will attain a high level of performance in the 1970's... It has also been assumed that there will be no major significant changes in general education policies currently prevailing or in the process of development".(5) It should be emphasized, therefore, that the enrolment projection is based on the assumption that the present "open-door" policy of admission of all qualified students wishing to attend university will be continued. If admissions policy, which is politically determined, should become more restrictive, the enrolment projection would turn out to be too high. Reduction of the funds available for student assistance and inadequacy of financial support for universities could have this result. It may be also that the public attitude to higher education is changing. There is some concern that universities are over-producing in certain areas of graduate study. If this should turn out to be so, the enrolment of graduate students would be reduced, except as there may be compensation by growth in other fields of graduate study. On the other hand, enrolment in arts and science is rising rapidly and there is a shortage of personnel in the health sciences. We might recall also that highly qualified manpower in some professions, e.g., medicine, architecture and university teaching and research, have been recruited from abroad. If the flow of these expensively trained people into Canada should be reduced, or dry up, our universities would have to make good the deficit.

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(1) K.V. Pankhurst, University Planning, a Paper presented at the Annual Meeting of AUCC, November 1969, p. 2.

(2) Dr. Sheffield revised his 1963 enrolment projection substantially upward in 1966.

(3) Z.E. Zsigmond and C.J. Wenaas, Enrolment in Educational Institutions by Province 1951-52 to 1980-81. Economic Council of Canada, Staff Study No. 25, January, 1970. For methodology and assumptions see pp. 3, 4 and Appendix G. Community College enrolments are not included. (Hereafter referred to as Staff Study No. 25.)

(4) Staff Study, No. 25, p. 265.

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(5) Staff Study No. 25, pp. 3, 4.

The growth in actual enrolment, undergraduate and graduate, full-time and part-time in the regular winter session, from 1958/59 to 1967/68, preliminary enrolment in 1968/69 and projected enrolment from 1968/69 to 1975/76 and for 1980/81 are shown in Table I. In the same table, we show full-time equivalent enrolment from 1962/63 to 1968/69 and projections to 1975/76 and 1980/81.

During the ten-year period, 1958/59 to 1968/69 full-time enrolment increased from 95.0 thousand to 293.6 thousand, or 209 per cent, and part-time enrolment increased from 27.1 thousand to 104.1 thousand, or 284 per cent. Full-time equivalent enrolment increased from 104.0 thousand to 328.3 thousand, or 216 per cent.

The ratio of full-time enrolment to the population 18 to 24 years of age rose from 6.6 to 12.1(6) in the ten-year period 1958/59 to 1968/69 and the participation rate of the adjusted full-time enrolment increased from 6.3 to 13.7 per cent of this age group.

The relatively rapid growth of graduate enrolment is particularly significant in view of the greater cost per student associated with graduate education.(7) In 1958/59, 4,600 full-time graduate students were enrolled in Canadian universities accounting for 4.8 per cent of the total full-time enrolment. By 1968/69 this had risen by 467 per cent to 26,100 or 8.9 per cent of the total.

Between 1962/63 and 1968/69, part-time graduate enrolment increased from 5,400 to 10,500 or by 94 per cent.(8) During the same time, full-time

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(6) Including Teachers' Colleges in each year. Figures provided by the Dominion Bureau of Statistics, Education Division.

(7) See Chart I.

(8) Part-time undergraduate and graduate enrolments are not available as separate figures prior to 1962/63.

TABLE I

Universities and Colleges of Canada

Full-time, Part-time, and Full-time equivalent enrolments, Actual 1958/59 to 1967/68, Preliminary 1968/69 and Projected 1969/70 to 1975/76 and 1980/81

Year	Full-time enrolment				Part-time enrolment				Full-time equivalent enrolment (2)			
	under-graduate (000)	graduate (000)	total (000)	index of increase: total full-time enrolment	under-graduate (000)	graduate (000)	total (000)	index of increase: total part-time enrolment	under-graduate (000)	graduate (000)	total (000)	index of increase: total full-time equivalent enrolment
1958-59	90.4	4.6	95.0	100	n/a	n/a	27.1	100			104.0	100
59-60	96.7	5.2	101.9	107.3	n/a	n/a	28.9	106.6			111.5	107.2
60-61	107.3	6.5	113.9	119.9	n/a	n/a	31.2	115.1			124.3	119.5
61-62	121.5	7.3	128.9	135.7	n/a	n/a	38.1	140.6			141.6	136.2
62-63	133.0	8.4	141.4	148.8	38.7	5.4	44.0	162.4	145.9	10.2	156.1	150.1
63-64	147.3	11.1	158.4	166.7	50.5	6.5	57.0	210.3	164.1	13.3	177.4	170.6
64-65	164.4	13.8	178.2	187.6	56.6	7.3	63.8	235.4	183.3	16.2	199.5	191.8
65-66	188.7	17.2	205.9	216.7	66.2	7.7	73.9	272.7	210.8	19.8	230.6	221.7
66-67	213.0	19.7	232.7	244.9	75.7	10.1	85.8	316.6	238.2	23.1	261.3	251.3
67-68	237.0	24.2	261.2	274.9	88.3	10.7	99.0	365.3	266.4	27.8	294.2	282.9
68-69(1)	267.5(3)	26.1	293.6	309.1	93.6	10.5	104.1	384.1	298.7	29.6	328.3	315.7
69-70	292.3	31.1	323.4	340.4	105.5	12.0	117.5	433.6	327.5	35.1	362.6	348.7
70-71	318.9	36.1	355.0	373.7	116.3	13.5	129.8	479.0	357.7	40.6	398.3	383.0
71-72	349.5	41.2	390.7	411.3	129.9	14.8	144.7	533.9	392.8	46.1	438.9	422.0
72-73	386.4	46.6	433.0	455.8	145.7	16.6	162.2	598.5	435.0	52.1	487.1	468.4
73-74	417.4	53.1	470.5	495.3	158.9	18.8	177.7	655.7	470.4	59.4	529.8	509.4
74-75	457.7	58.8	516.5	543.7	176.4	20.7	197.1	727.3	516.5	65.7	582.2	559.8
75-76	493.8	66.2	560.0	589.5	192.4	23.3	215.7	795.9	557.9	74.0	631.9	607.6
80-81	638.4	111.6	750.0	789.5	258.9	39.1	298.0	1099.6	724.7	124.6	849.3	816.6

(1) Preliminary.

(2) Full-time equivalent enrolment calculated by AUCC; assumed three part-time students equivalent to one full-time.

(3) Includes Teachers' Colleges enrolment from 1968/69.

Source: Z.E. Zsigmond and C.J. Wenaas, Enrolment in Educational Institutions by Province, 1951-52 to 1980-81. Economic Council of Canada, Staff Study No. 25, January, 1970, pp. 94-95.

graduate enrolment increased by 211 per cent from 8,400 to 26,100. The difference in these rates of growth reflects the slower rate of growth of part-time enrolments, resulting in part from the discouragement of part-time graduate enrolment by university departments and in part from the availability of more funds for support of graduate students. The increase in full-time equivalences, from 10,200 to 29,600 was 190 per cent.

It is significant too, that the proportion of women enrolled full-time has increased from 22 to 36 per cent of full-time enrolment in the last ten years. There is probably a substantial potential for growth in university enrolment from this segment of the population.

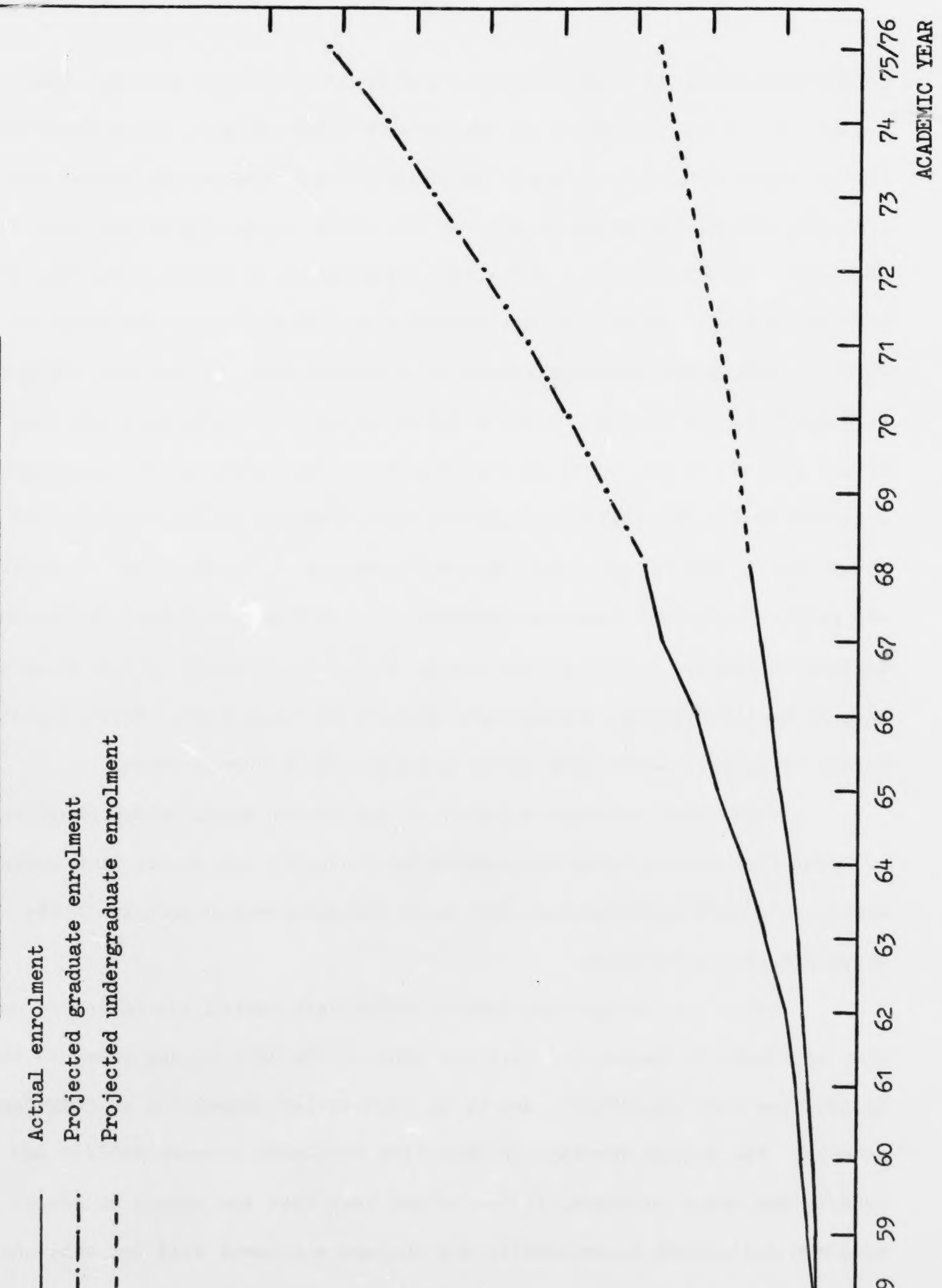
The rise in enrolment came about because of an increase in the population in the university age group (18 to 24)(9) and an increase in the university participation rate of those in the university age group. The birth rate rose markedly after the early forties and remained at the new high level until the late fifties. The birth rate then declined slowly until about 1963 when a rapid decline began. This decline will eventually be reflected in the size of the university age population, but not until the 1980's. The population 18 to 24 years of age rose from 1.7 million in 1958 to 2.4 million in 1968, or by 700 thousand.

It is apparent that the demographic factor, while important in bringing about the increase in demand for higher education, is not the most important one. A more important factor is what has been called the "explosion of educational expectations" on the part of youth and their parents. Educators, governments and business have all stressed the importance of education - the higher the better - in a technological and automated society, in order to

" THERE is a substantial number of students OVER age 24 in universities."

CHART I

INDEX OF FULL-TIME UNDERGRADUATE AND GRADUATE ENROLMENT 1958/59 TO 1975/76



obtain employment and higher incomes and promote economic growth. There is a growing body of literature on the subject. For example, the publications of the Organization for Economic Co-operation and Development and of the Economic Council of Canada as well as the social science journals have devoted much space to the subject. Hence, the expectation of higher financial returns from employment, the belief that education and training are essential in order to obtain suitable employment in a society which is rapidly becoming automated and the aspiration for a better place in society have all been firmly planted in the minds of the people of this country. The importance attached to the acquisition of general education and skills increased as we moved from a rural to an urban-industrial society. In addition to the private and public "material" benefits believed to flow from investment in "human capital" there has been a strengthening of public interest in education to enrich the intellectual and cultural aspects of human life. These aspects become of greater importance as the prospect of leisure improves.

Fulfilment of these aspirations has become possible for many, because of affluence, availability to students of financial assistance from governments, increased opportunities for education and greater variety in the offerings of universities.

These are amongst the factors which have raised the full-time university enrolment in Canada from 6.6 per cent of the 18 - 24 age group in 1958/59 to 12.1 per cent in 1968/69, and by an even larger proportion in secondary schools. The actual increase in full-time enrolment between 1958/59 and 1968/69 was 198.6 thousand. It is assumed here that the impact of socio-economic influences on university and college enrolment will not substantially diminish.

The structure of post-secondary education in Canada is changing drastically and rapidly. It might be thought that the emerging community college will drain off some potential university students. The Bladen Commission conceded that this may prove to be the case, "but the experience in the United States, where the junior college movement is most advanced, has been to the contrary."(10) Where university entrance or transfer programs are available in community colleges, they appear to be in high demand, e.g. in the Collèges d'enseignement général et professionnel, a high proportion of the students in 1968/69 entered the university entrance program. The number of such institutions in Canada is increasing and it can be assumed that they will increasingly draw students into the post-secondary educational stream and with the provision of more university transfer programs will increase the stream of students going to university, at least beyond the first year.

We assume that enrolments will continue to grow, reflecting belief in the intellectual, cultural, social and material values of higher education. As Canadian society becomes more industrialized, more persons with education and training at secondary and tertiary levels will be required. We assume, too, that there will be a continued vigorous demand for part-time enrolment at the undergraduate level as the population shifts to urban centres and as evening courses become more readily available; with the growing recognition that education, even at university level, is a continuing process, part-time enrolment of adults will increase. The demand for higher qualifications of teachers will be reflected in higher enrolments in summer schools and evening classes, which are not reflected in the projections.

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(10) The Bladen Commission Report, p. 17.

The projected increase in the population in the 18 to 24 age group is from 2.4 million in 1968/69 to 3.1 million in 1975/76, an increase of 700,000 or 29 per cent. It is anticipated that full-time enrolment will grow from 293.6 thousand in 1968/69 to 560.0 thousand by 1975/76, an increase of 91 per cent; that part-time enrolment will grow from 104.1 thousand to 215.7 thousand, an increase of 107 per cent. (Expressed in terms of full-time equivalences, this is an increase of 92 per cent). This magnitude with an increase in the population of university age of 29 per cent implies a substantial rise in the full-time participation rate which is projected to increase from 12.1 in 1968/69 to 18.3 by 1975/76.(11)

The projected increase in graduate enrolment should be particularly noted. An increase from 26.1 thousand to 66.2 thousand in full-time graduate enrolment (154 per cent) and in part-time graduate enrolment from 10.5 thousand to 23.3 thousand (122 per cent) is anticipated between 1968/69 and 1975/76. In 1968/69 full-time equivalent graduate enrolment was 9.0 per cent of total full-time equivalent enrolment and is expected to rise to 11.7 per cent by 1975.(12)

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(11) Staff Study No. 25, p. 245. In terms of full-time equivalences the ratio would rise from 13.7 per cent to 20.4 per cent.

(12) For details consult Table I and Chart I.

III. Projection of Operating Expenditures of Universities and Colleges

Under the constitution, education is a provincial responsibility and increases in the cost fall directly on provincial governments. However, the federal government has supported higher education financially in a number of ways.

After the war, direct grants were made to universities to assist in the education of veterans. Following the recommendation of the Massey Commission, the federal government instituted a system of per capita grants to universities in 1951. The initial grant of fifty cents per head of provincial population was increased from time to time, by fifty cent increments, to $2.00 in 1962. As Prime Minister St. Laurent made clear, these grants were intended to maintain quality rather than to increase existing facilities. By 1965, the crisis of numbers had become so acute that the Bladen Commission recommended an immediate increase of the per capita grant to $5.00 for 1965/66, to be increased by $1.00 per year until discussions with the provinces had led to appropriate revision of the amount. In January 1966, the Prime Minister announced an interim arrangement for the year 1966/67 increasing the per capita grant to an average of $5.00. During the life of the per capita grant system, federal payments and abatements rose from $7.0 million in 1951/52 to $98.6 million in 1966/67.(1)

As was indicated in Section I of this document, the Prime Minister, in October 1966, announced a drastic change in policy respecting financial assistance to universities and colleges - a policy subsequently embodied in the Federal-Provincial Fiscal Arrangements Act, 1967. The substance of the provisions of this Act was set out in Section I. The fiscal transfer and adjustment payments are made directly to provincial governments to be used by them as they wish.

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(1) John B. Macdonald, et al, The Role of the Federal Government in Support of Research in Canadian Universities, Science Council of Canada, Special Study No. 7, prepared for the Science Council of Canada and the Canada Council, (Ottawa: Queen's Printer, 1969) p. 92. (Hereafter referred to as the Macdonald Study Group Report).

The fiscal transfer and adjustment payments are based on 50 per cent of allowable operating expenditures of post-secondary education, being on account of both operating and capital needs, but in the calculation, take account of neither capital expenditures nor carrying charges on borrowed capital. The Act being an open-ended arrangement, payments increase proportionately to allowable operating expenditures of post-secondary education as defined in the regulations. The estimated payments for the first three years are: 1967/68: $412.1 million; 1968/69: $502.3 million; 1969/70: $618.2 million.(2) It will be noted that the estimated payments have increased by about 25.0 per cent per year.

The Macdonald Study Group reported that, in 1967/68, the proportion of post-secondary expenditures attributable to institutions other than universities was about one-quarter of the allowable post-secondary operating costs.(3)

Of the total operating expenditures of universities, academic salaries account for about 35 percent; other salaries (administration, clerical, library, maintenance), books and periodicals, assisted research, supplies, equipment and services, etc., account for the balance.

In the period 1958/59 to 1968/69, actual total operating expenditure increased by 659 per cent (from $121.1 million in 1958/59 to $919.2 million in 1968/69) and actual operating expenditure per full-time equivalent student

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(2) House of Commons Debates, March 26, 1969, pp. 7137-8, and the office of the Secretary of State.

(3) Macdonald Study Group Report, p. 75.

TABLE II

UNIVERSITIES AND COLLEGES OF CANADA
ACTUAL AND PROJECTED OPERATING EXPENDITURE, TOTAL AND PER FULL-TIME EQUIVALENT STUDENT, 1958/59 TO 1975/76

Year	Operating Expenditure, Per Full-Time Equivalent Student Per Student $	 Total ($000)
ACTUAL		
1958-59	1165	121,113
59-60	1333	148,659
60-61	1459	181,311
61-62	1492	211,330
62-63	1563	244,015
63-64	1634	289,931
64-65	1730	345,222
65-66	1875	432,332
66-67	2217	579,215
67-68	2529	743,923
68-69 (2)	2800	919,246 (1)

PROJECTED (3)	PROJECTION A Per Student $	 Total ($000)	PROJECTION B Per Student $	 Total ($000)
69-70	2940	1,066,044	2804	1,016,730
70-71	3087	1,229,552	3037	1,209,637
71-72	3241	1,422,475	3288	1,443,103
72-73	3403	1,657,601	3561	1,734,563
73-74	3574	1,093,505	3856	2,042,909
74-75	3752	2,184,414	4176	2,431,267
75-76	3940	2,489,686	4522	2,857,452

(1) Preliminary

(2) Includes Teachers' Colleges expenditure from 1968/69.

(3) See Appendix to this Section for description of projection methods.

Source: Total actual operating expenditure, 1958/59 to 1967/68 and preliminary, 1968/69 supplied by the Education Division, Dominion Bureau of Statistics.

increased by 140 per cent (from $1,165. in 1958/59 to $2,800. in 1968/69). In terms of full-time students the increase was 146%. The increase in total expenditure during this period was affected more by rising enrolment than by rising expenditure per student. About 61 per cent of the increase in total operating expenditures owing to these two factors taken separately, is due directly to rising enrolments, while only about 39 percent is due to rising expenditures per student. This distinction is important because it indicates that it is the growth in enrolment that has been the major reason for the increasing financial requirements of the universities rather than the increase in expenditure per student, although the latter has been substantial. The universities have attempted to satisfy the rising educational expectations of the public for higher education by making places available. If this policy is to be continued, total costs will be of increasing magnitude. The enrolment projections of the Economic Council of Canada give us what we believe to be a realistic picture of the probable increase in university enrolment to 1975/76. These projections also give us an idea of the probable growth of graduate enrolment relatively to the total, an important element in rising expenditure. While we accept the enrolment projection as realistic, it may, like all previous projections, turn out to be too low.

The largest single factor in the increase in cost per student during the period 1958/59 to 1968/69 was growing faculty costs, especially academic salaries which constitute about 35 per cent of operating expenditures(4) and about 65 per cent of total instructional cost. While increases in Canadian academic salaries were large, it must be noted that the market for academics is international and highly competitive. Canadian universities were doing no more than react to rapidly rising salaries elsewhere. There is some evidence that qualifications of faculty members also increased in this period.(5)

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(4) About 42 per cent if assisted research is excluded from operating expenditure.

Salary increases, of course, occurred in all categories of employment and there were large additional expenditures on research assisted by agencies outside the universities.

Projection of university costs is hazardous. It is only possible to indicate the probable magnitude of cost increases, and this we have done in current dollars making two projections to 1975/76.

The lower of these projections (Projection A) is based on the assumption that operating expenditure per full-time equivalent student will increase at 5 per cent per year, 1968/69 to 1975/76. From 1961 to 1965 the annual rate of increase of operating expenditure per full-time equivalent student was 5 per cent and in the same period there was strong economic growth, rising wages and salaries and relatively little inflation. 5 per cent was chosen as the rate which might be expected to represent the increase in per student expenditure under similar circumstances in the future.

But these conditions may not prevail. The semi-logarithmic linear trend fitted by the method of least squares to the expenditure per full-time equivalent student for the period 1958/59 to 1968/69 (Projection B) was projected to 1975/76, thus projecting into the future, past experience which included periods of slack, rapid growth and substantial inflation.(6)

These projections are both based on the assumption that the present "open-door" policy for all qualified applicants will prevail in the future.

In Table II and Chart II is shown the total actual operating expenditures and operating expenditures per full-time equivalent student from 1958/59 to 1968/69 projected to 1975/76.

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(5) Dominion Bureau of Statistics reports show an increase in staff holding doctorates from 42 per cent in 1958/59 to 50.0 per cent in 1968/69. This is not conclusive evidence, however, as the institutions reporting were not the same in each year.

(6) See the Appendix to this Section.

The following is a summary of actual and projected expenditures per full-time equivalent student and in total, drawn from Table II.

Universities and Colleges of Canada

Actual and Projected Operating Expenditures

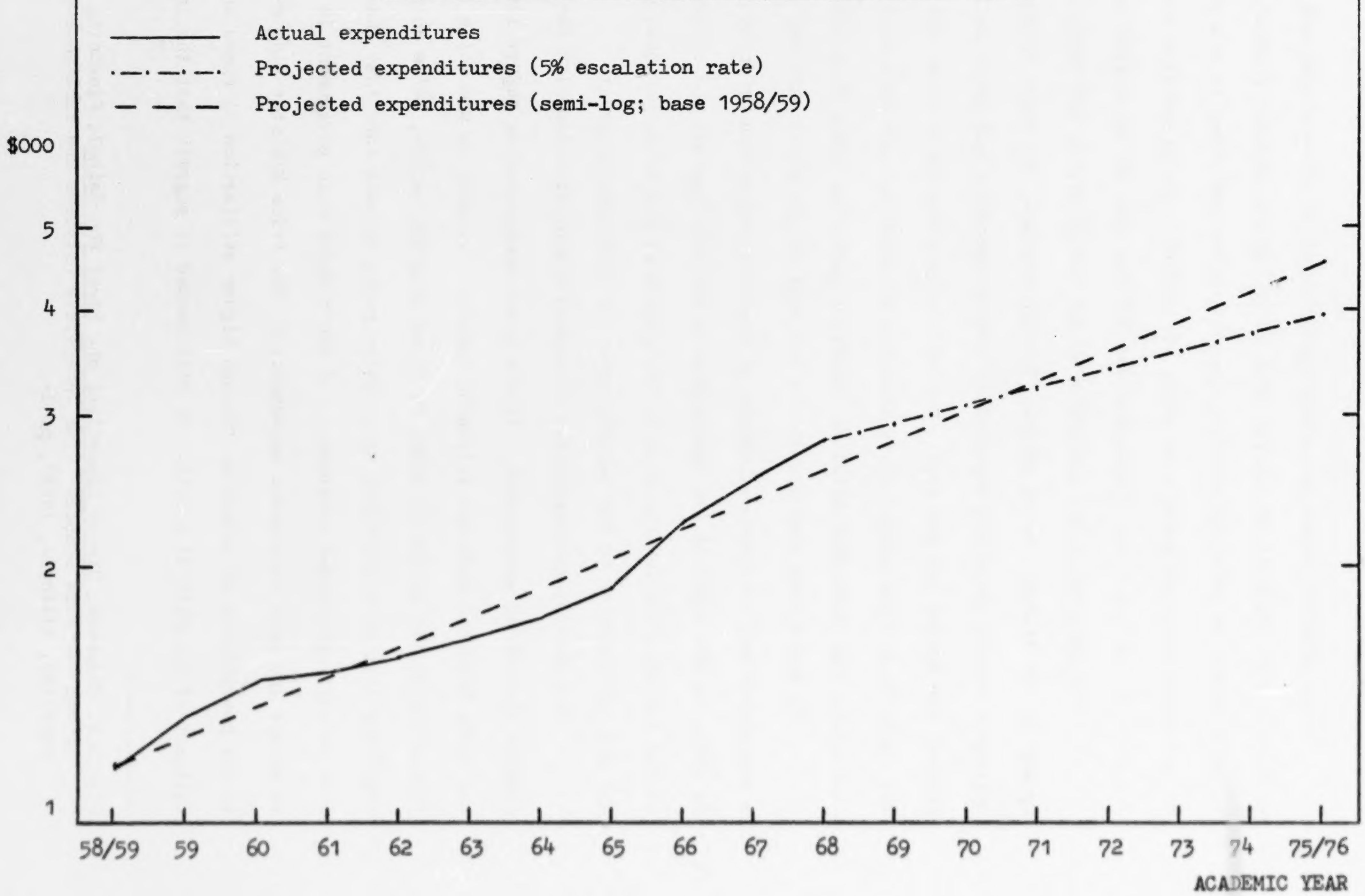
Year	Expenditure per full-time equivalent student ($)		Total Operating Expenditures $ millions	
ACTUAL				
1958/59	1165.		121.1	
1962/63	1563.		244.0	
1968/69	2800.		919.2	
PROJECTED	Projection A	Projection B	Projection A	Projection B
1975/76	3940	4522	2489.7	2857.5
Annual rate of increase	5.0%	8.3%		

It was indicated above that of the increase in total operating expenditure arising out of increased enrolment and increased expenditure per student each taken separately from 1958/59 to 1968/69 about 61 per cent arose from increased enrolment and about 39 per cent from increased expenditure per student. In the period of our projections the relative impact in terms of our two projections will be 69 per cent and 60 per cent for increased enrolment and 31 per cent and 40 per cent for increased expenditure per student.

The projected increases in expenditure are very large and may be thought unrealistic and are best looked upon as ranges of potential expenditures, i.e. the actual expenditure per full-time equivalent student in 1975/76 as falling somewhere between $3940 and $4520 and total operating expenditures in 1975/76 as falling somewhere between $2,489.7 million and $2,857.5 million.

CHART II

OPERATING EXPENDITURES PER FULL-TIME EQUIVALENT STUDENT
1958/59 TO 1975/76



In 1958/59, total operating expenditures of universities and colleges were less than one-half of one per cent of the gross national product, at current prices of 1958; by 1968/69, the proportion had risen to 1.3 per cent of the gross national product of 1968. By 1975/76, the proportion would be 2.1 per cent on our lower projection and 2.4 per cent on our higher projection.

The experience and prospects in the United States are interesting by way of comparison. Prior to the nineteen-sixties, the ratio between aggregate annual operating expenses of higher education and gross national product was around 1.0 per cent. In the sixties, the ratio rose, and by 1967 was close to 1.5 per cent. It is expected to reach 2.5 per cent by 1975; this would mean more than trebling aggregate operating costs from 1965 to 1975.(7)

It would seem that 2.1 to 2.4 per cent of the gross national product is a reasonable but not generous amount to spend on higher education and research in 1975, in the light of its importance to the intellectual and cultural life of the country, its contribution to the growth of the gross national product, and its contribution to the earning power of those who enjoy it.

The federal government has expressed dissatisfaction with the present open-ended arrangement. In his press conference on August 13th, 1969, the Prime Minister made the following remarks: "...what we are doing is indicating to the provinces that, as those programs expire, we're going to negotiate them in a different way. We're going to make sure that there isn't what we call open-ended programs... I don't think this government is going to accept any more open-ended agreements." The Prime Minister also referred to the possibility of economies through higher utilization of space and curtailment of the rate of growth. He also seemed to suggest that the increases in teachers' salaries were too large.

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(7) M.M. Chambers, Higher Education: Who Pays? Who Gains?, Financing Education Beyond the High School. (The Interstate Printers and Publishers, Danville, Illinois, 1968), p. 14.

The universities of course, would agree that all possible economies should be sought provided quality is not sacrificed and would agree that space be utilized as fully as possible. There is no doubt that economies can be expected by better co-ordination of university programmes provincially, regionally and nationally. We indicate in Section VII (on rationalization of university activities) steps already being taken and contemplated. The possibilities of fuller utilization of plant are, for two reasons, much less than is sometimes assumed. University space is already heavily in use for most of the year and during the winter session the utilization is high, even in the evening. In the second place, since classrooms and other teaching space as distinct from space for research, offices, libraries, ancillary enterprises, etc., constitute only 20 to 25 per cent of total usable space, the economies resulting from introduction of the trimester or quarter system are not large and the operating expenses have been found to be substantially higher as a consequence.

There is not much possibility of curtailment of the rate of growth in expenditures in face of the increasing enrolment suggested by the population projections. The demand is there, and it is to be expected that society will require that it be satisfied: to do otherwise would deny the satisfaction of aspirations which society firmly holds.

It must be emphasized that the increase in enrolment is already in sight and has been measured. If adequate financial support is not forthcoming, the universities,having made what economies are appropriate and possible, will have two options: restrict enrolment as has been done in Britain or allow quality to deteriorate as has happened in France. Either course would be a reversal of the policy to which Canadian society is committed.

It is pointed out in Section V, that financing must come largely from governments and students. This raises a number of questions which must be faced by universities and governments. How can economies be achieved through rationalization of activities or otherwise, without deterioration of quality? What share of the operating expenditure should be borne by students and governments respectively? How should public expenditures be divided between federal and provincial governments taking into account the constitutional aspects, the revenue sources and financial obligations of each, the regional disparities and the financial requirements of the universities to adequately meet the demand for places?

APPENDIX

The Projections of University Operating Expenditure

Actual total operating expenditures for 1958/59 to 1968/69 were provided by the Dominion Bureau of Statistics. Actual expenditures per full-time equivalent student were calculated for 1958/59 to 1968/69.

(1) The lower projection (Projection A) was obtained by escalating actual (preliminary) operating expenditure in 1968/69 per full-time equivalent student at 5 per cent per annum.

(2) The higher projection (Projection B) was calculated by projecting to 1975/76 the semi-logarithmic trend for 1958/59 to 1968/69, fitted by least squares to actual expenditure per full-time equivalent student. The annual rate of increase is 8.3 per cent. The projection formula is:

$\log Y = 3.067360 + .034585X$. Year of origin 1958/59.

IV Projection of Capital Expenditures of Universities and Colleges

Apart from grants in aid of research the federal government has very modestly assisted universities with capital funds. The Canada Council, when it was established in 1956, was provided with a capital fund of $50 million for matching grants to assist in building university facilities for the humanities and social sciences. This fund has now been wholly allocated but not all paid out. In 1966, the Health Resources Fund of $500 million was set up and the federal government was authorized to pay a province up to 50 per cent of the cost of facilities for training in the health or health related professions and for research in the health field. Substantial amounts of capital funds for research are provided each year to the academic community through federal departments, corporations and agencies. As noted above, the fiscal transfer and adjustment payments provided for in the legislation of 1967, while calculated on academic operating costs, omit interest and sinking fund charges and are regarded as being on account of both operating and capital needs of the post-secondary educational institutions.

It is clear that very substantial amounts of money will be required in each of the next five years to meet the capital needs of universities and colleges if they are to accommodate the student enrolment and provide accommodation for additional staff, research facilities, residences and other services.

It should be noted that in this context actual capital expenditures include outlays on land, buildings of all kinds (1) and their contents and outlays for renovations as reported to the Dominion Bureau of Statistics by the universities and colleges.

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(1) Including residences and other ancillary enterprises.

TABLE III

UNIVERSITIES AND COLLEGES OF CANADA
ACTUAL AND PROJECTED CAPITAL EXPENDITURES
TOTAL AND PER ADDITIONAL FULL-TIME EQUIVALENT STUDENT 1958/59 TO 1975/76

YEAR	Number of additional full-time equivalent students ACTUAL	ACTUAL CAPITAL EXPENDITURES Total ($000,000)	ACTUAL CAPITAL EXPENDITURES Per additional full-time equivalent $	ACTUAL CAPITAL EXPENDITURES 3 year moving average of actual expenditure per additional full-time equivalent $
1958-59	11.5	52.0	4520	-
59-60	7.5	71.0	9470	6747
60-61	12.8	80.0	6250	6877
61-62	17.3	85.0	4910	6317
62-63	14.5	113.0	7790	6503
63-64	21.3	145.0	6810	8153
64-65	22.1	218.0	9860	8257
65-66	31.1	252.0	8100	9343
66-67	30.7	309.0	10070	9683
67-68	32.9	358.0	10880	10210
68-69	36.1	330.0 (1)	9680	-

YEAR	(2) PROJECTED	(2) PROJECTED CAPITAL EXPENDITURES Projection C Total ($000,000)	Projection C Per Additional full-time equivalent $	Projection D Total ($000,000)	Projection D Per additional full-time equivalent $
69-70	34.3	352.6	10,280	392.0	11,429
70-71	35.7	367.0	10,280	434.0	12,157
71-72	40.5	417.4	10,280	525.0	12,931
72-73	48.2	495.5	10,280	663.0	13,755
73-74	42.7	439.0	10,280	624.7	14,631
74-75	52.4	538.7	10,280	815.6	15.564
75-76	49.7	510.9	10,280	822.8	16,555

(1) Preliminary.
(2) See Appendix to this Section for description of projection methods.
Source: Total Actual Capital Expenditures, 1958/59 to 1967/68 and Preliminary, 1968/69
Supplied by the Education Division, Dominion Bureau of Statistics.

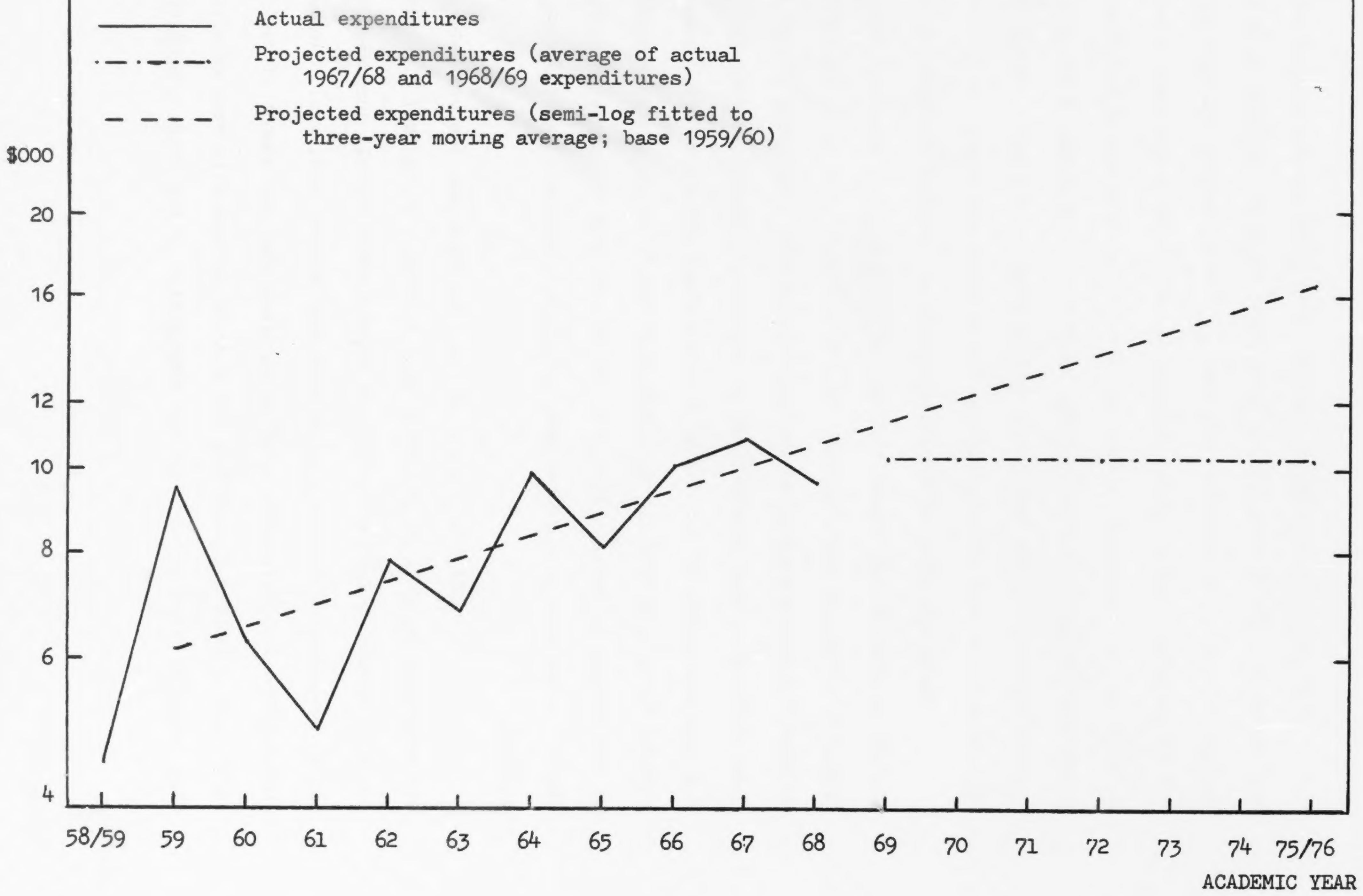
It is very difficult to project realistically the amounts of capital which will be required to meet these demands. Changes in construction costs, the cost of furnishings and land prices all affect the cost per student. But in addition, technological changes may affect both the cost of buildings and the cost of equipment or may increase the utilization of buildings. Structural designs and tastes change so that the buildings of the future are not necessarily the same thing as buildings of the past. These changes will affect the cost of construction in unpredictable ways.

There are other difficulties as well. Ideally we should have a projection of the capital expenditure per additional place required over the specified period of time, in this case to 1975/76. But it is impossible to separate capital expenditures which do not provide additional places from those which do. Some expenditures on renovation provide additional places, e.g. the conversion of residences to classrooms; others do not. Some merely improve the accommodation. Moreover, some universities charge expenditures on renovations to capital account; some charge them to operating account. Therefore, no attempt has been made to separate expenditures for these two purposes.

The "student mix" is one of the most important factors determining the necessary expenditure per additional student. The actual figures of the Dominion Bureau of Statistics include expenditures for all purposes, - the health sciences, residences, other ancillary enterprises, etc. Our projections include the same categories. But it is clear that the amount of capital per additional student required from one year to another will vary greatly depending, amongst other factors, on the composition of the student body being

CHART III

CAPITAL EXPENDITURES PER ADDITIONAL FULL-TIME EQUIVALENT STUDENT
1958/59 TO 1975/76



provided for, whether, for example, arts, commerce and law or medicine, dentistry and architecture. Expenditures in total and per student for these purposes differ enormously.

Actual and projected capital costs are set out in Table III. The capital expenditure per additional full-time equivalent student was used as the basic unit. The dollar value of the capital requirements to 1975/76 was projected in two ways. One is the average of the actual expenditure per student for 1967/68 and 1968/69 carried forward without change in each year to 1975/76. The assumption underlying this projection is that economic conditions will be reasonably stable, that there will be no substantial inflation and that there may be improvement in design and greater efficiency in use over the period in question. These amounts we regard as being less than adequate to maintain the universities in their present state of health, but they do illustrate what the projection of present expenditure per student would yield in total expenditure.

Since the assumed conditions may not prevail, the past from 1958/59 (Projection D) was projected to 1975/76 by calculating the semi-logarithmic linear trend, fitted by least squares, to a three-year moving average of actual expenditures per additional full-time equivalent student from 1958/59 to 1968/69.

In summary, the actual and projected costs per student and in total are as follows:

Actual Per Additional Full-Time Equivalent Student and Total Capital Costs, 1958/59 and 1968/69. Projected Costs, 1971/72; 1975/76

	Projection C		Projection D	
	Per Student $	Total ($000,000)	Per Student $	Total ($000,000)
1958/59	4,520	52.0	4,520	52.0
1968/69	9,680	330.0	9,680	330.0
1971/72	10,280	417.4	12,931	525.0
1975/76	10,280	510.9	16,555	822.8

The absolute and percentage increases in expenditures per additional full-time equivalent student and in total, for the periods 1961/62 to 1968/69 (actual) and 1968/69 to 1975/76 (projected), are given here for comparison.

	Actual (1961/62 - 1968/69)	Projection C (1968/69 - 1975/76)	Projection D (1968/69 - 1975/76)
Expenditure per additional student:			
Absolute increase ($)	4,770	-	6,875
Percent increase	97%	-	71%
Total Expenditure:			
Absolute increase ($million)	245.0	180.9	492.8
Percent increase	288.2%	54.8%	149.3%

These comparisons suggest two conclusions. The first is that in the period 1961/62 to 1968/69 the universities and colleges were impoverished as to capital. The second conclusion is that even the higher projected amount may be minimal in view of the projected enrolment in universities. Without at least this volume of support, the universities might propose limitation of enrolments.

What universities will actually spend will depend on the funds forthcoming which in turn will depend on the generosity of private donors and government policy respecting the support of higher education. If past experience is an accurate guide, the primary responsibility will fall on governments. We have tried to estimate requirements which if not met will seriously affect the quality and growth of universities and colleges in Canada. Ground lost now cannot be recovered later. There may be permanent losses to students which no amount of continuing education can overcome. Costs of this magnitude would impose a very heavy, probably an impossible burden on the provinces if they were required to bear it alone. The burden would be particularly acute for some of the provinces.

APPENDIX

Projections of University Capital Expenditures

Actual total capital expenditures from 1958/59 to 1968/69 were provided by the Dominion Bureau of Statistics. The figures used here are over-all capital expenditures as reported to the Bureau by the universities and include building for all purposes, including health sciences, ancillary enterprises including residences, and land. Actual expenditure per additional full-time equivalent student was calculated over this period of time and two projections of expenditure per additional full-time equivalent student were made to 1975/76. These projections are as follows:(1)

(1) The lower projection (Projection C) is the average of the actual expenditure for 1967/68 and 1968/69 per additional full-time equivalent student, carried forward in each year to 1975/76.

(2) The higher projection (Projection D) is based on a log-linear trend fitted by least squares to a three-year moving average of the data for 1958/59 to 1968/69. The annual rate of increase is 6.4 per cent. The projection formula is $\log Y = 3.789808 + .026820X$

The projections of total capital costs in each year were, of course, obtained by multiplying the projected cost per additional full-time equivalent student by the additional full-time equivalent enrolment derived from the enrolment projections of the Economic Council of Canada

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(1) See Table III and Chart III.

V. Estimated Total Expenditures and Sources of Income

Estimated total expenditures of Canadian universities, operating and capital, using our lower projections based on estimated operating expenditure per full-time equivalent student and capital expenditure per additional full-time equivalent student in 1975/76 amount to $3,000 million in current dollars. Our higher estimate of total expenditure is $3,680 million. The Economic Council of Canada estimated the expenditure of all governments on universities at potential in 1975 to be $2,700 million in 1967 dollars.(1) If we apply the Council assumption of an over-all price increase of about 20 per cent over the period 1967 to 1975, the Council's estimated expenditure would be about $3,240 million in current dollars - a figure which falls between our two estimates.(2)

The following is a summary of our projections for 1975/76:

Universities and Colleges of Canada

Estimated Total Expenditure, Operating and Capital, 1975/76 Per Full-time Equivalent Student and Per Additional Full-time Equivalent Student

Projections A and C	Per Student	Per Additional Student	Total
Operating Expenditure	$3,940	-	2,489.7 million
Capital Expenditure	-	$10,280.	510.9 million
Total			$3,000.6 million
Projections B and D			
Operating Expenditure	4,522	-	2,857.5 million
Capital Expenditure	-	16,555.	822.8 million
Total			$3,680.3 million

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(1) Economic Council of Canada, Sixth Annual Review, (Ottawa: Queen's Printer, September 1969), p. 36. Note that this estimate is at potential in 1975. The economy may not reach its estimated potential level.

(2) Op. cit., p. 17.

In 1967, the expenditure of all governments on education was $4,300.0 million, or 20.9 per cent of total expenditure. Of this $900.0 million, or 21 per cent of total expenditure on education, was spent on university education. The projections of the Economic Council suggest that at potential in 1975 expenditure on education in current dollars could be about 23 per cent of total expenditure of all governments and that expenditure on university education might reach about 32 per cent of expenditure on education. The average annual percentage change in expenditure of all governments on university education between 1967 and at potential in 1975, in 1967 dollars, projected by the Economic Council was 14.7.(3)

Total university expenditure (operating and capital) in 1968/69 was about 1.7 per cent of gross national expenditure in 1968. Our projection indicates that the amount required in 1975/76 in current dollars will be from about 2.5 per cent to 3.1 per cent of estimated gross national product in 1975.

Operating Income and Expenditure

The following is a tabulation of operating income, including assisted research, by sources.

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(3) Economic Council of Canada, Sixth Annual Review, September, 1969, pp. 32; 36.

Universities and Colleges of Canada

Operating Income(1), 1961/62 to 1967/68, by Sources

	Student Fees		Federal Govt.		Prov. Govt.		Other(2)		Total
	Amount ($000,000)	%	Amount ($000,000)	%	Amount ($000,000)	%	Amount ($000,000)	%	Amount ($000,000)
1961/62	56.2	26.7	41.9	19.9	78.9	37.5	33.5	15.9	210.6
1962/63	62.4	26.0	50.5	21.0	91.5	38.1	35.9	14.9	240.3
1963/64	75.6	26.7	57.1	20.2	110.8	39.1	39.8	14.0	283.3
1964/65	89.7	26.2	63.1	18.4	136.7	39.9	53.2	15.5	342.8
1965/66	110.6	25.9	73.1	17.2	183.2	43.0	59.4	13.9	426.3
1966/67	130.0	22.3	133.7	23.0	249.1	42.8	68.9	11.9	581.6
1967/68	144.5	19.5	(3) 83.8	11.3	(3) 435.5	58.8	76.8	10.4	740.6

(1) Including assisted research funds.
(2) Corporation, foundation and other funds.
(3) 1967-68 was the first year of the present fiscal transfer system to the provinces for post-secondary education. Hence, most of the direct contribution to universities by the federal government ($83.8 million) was for research.

Sources: D.B.S., Canadian Universities, Income and Expenditures, 1964-65, 1965-66 and 1966-67 and D.B.S., Daily, October 29, 1969.

It will be noted that the bulk of university operating income was provided by federal and provincial governments and by student fees. Other sources have accounted for 10.0 to 15.0 per cent over the period 1961/62 to 1967/68. The funds provided by corporations and foundations have been mainly for research. Fee income has more than doubled over the period reflecting in part higher fees per student and in part great increases in student enrolment.

The apparent decline in income from the federal government in 1967/68 reflects the introduction of the fiscal transfer system under the Federal-Provincial Fiscal Arrangements Act, 1967.(4) The federal contribution apart from assisted research funds is now made directly to each province and is reflected in the apparent increase in the provincial share. Most of the income received directly from the federal government was for research. It is apparent that some 70 per cent or more of the funding of university operating expenditures must come from the federal and provincial governments unless the fee structure is revised upward.

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(4) The amount of the transfer for post-secondary education was $412.1 million.

The question of the extent to which the student should finance his university education, either from his own resources or by borrowing, involves complex philosophical and practical considerations - philosophical as to the abstract "right" of a student to "free" university education and his "right" in view of his subsequent contribution to the socio-economic development of his country; practical as to the financial cost to the taxpayers who are faced with the competing demands of health, social welfare and other programmes.

The demand for "free" education could only be accepted if it were universally, or nearly universally, enjoyed, and if the social benefits were so large that they equated, or nearly equated the social costs. The latter condition may be fulfilled, but only a small portion of the university age population can or will ever wish or expect to attend university, but the total population, whether rich or poor, qualified or unqualified, interested or uninterested, supports the universities. But, if an applicant is qualified, he has the right to the opportunity of university education and has the right to expect assistance if he cannot finance his education by other means. Neither free tuition nor education are egalitarian devices. "Public low tuition institutions generally subsidize the moderately well-off at the expense of the poor...and the very rich".(5)

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(5) David Riesman, *Inflation in Higher Education*, McGill Journal of Education, Spring, 1970, pp. 10-11.

Expenditures on universities have risen rapidly and the projections indicate that these expenditures will continue to rise. A large proportion of the income of universities has been provided by governments and we have suggested that the only alternative to an increasing cost to governments is an upward revision of the fee schedules. In effect the universities might be financed wholly by students through payment of fees, or wholly by taxpayers or by some division of financing between them.

The financing of a university education is seldom borne wholly by the student as student. This would be the case if the whole cost of his education were paid for out of current earnings during the school year or from summer employment. But generally, the financial burden is shifted by a transfer of resources from the student's savings, the parents' income, the taxpayer or by foregoing a command over future resources in favour of a command over present resources. We may, therefore, ask: are there criteria which will guide us as to the appropriate distribution of the financial burden and are there devices by which this distribution may be achieved?(6)

To answer this question we must know to whom the benefits accrue. Cost-benefit analyses are necessary.(7) The benefits are both social and private. The social benefits of education, whether monetary or non-monetary, are those which accrue to society, and public financial resources should ideally be allocated to provide them. The individual "invests" in education in order to obtain higher monetary returns in the future or to obtain future non-

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(5) The real costs of education of course, cannot be transferred. These costs are the benefits foregone by society by devoting productive resources to education rather than to alternative uses.

(7) Cost-benefit analyses (operations research, systems analyses) cannot give us a complete answer because some benefits cannot be quantified, the data may be lacking or the benefits may have to be measured indirectly and incompletely, but even rough answers would help.

monetary benefits, or both; there may also be immediate "consumption" benefits. It can be argued that private financial resources should be devoted to producing these private benefits. Since the outcome to the individual, in terms of benefits, cannot be anticipated precisely the public should assume some share of the risk.

It must be noted that the real cost of education to society as a whole is the benefits foregone by the allocation of resources to education rather than to such things as health, social welfare, transportation and to private purposes. Governments, having scarce resources have to make decisions as to competing uses such as education, health and welfare. These decisions having been made, the question is: what part of the financing of education should be borne by the taxpayers and what part by the individual beneficiary? By what devices is this distribution best achieved?

But there is another problem. If we were to require each student to pay the full cost of the private benefits derived from university education from his own or parents' current resources the objective of equal opportunity would be denied to many low-income families. Hence, we have made extensive use of bursaries and grants to assist those so deprived and have thus attempted some income redistribution through education. Whatever other devices may be introduced the non-repayable grant will continue to be an essential part of the structure.

The Income-Related Assistance Program (Contingent Repayment Loan program or Educational Opportunity Bank)(8) has been put forward as a device which could be used to distribute the financing of education between private beneficiary and society in the manner desired by society and at the same time provide the means by which students in low-income categories could obtain a university education if desired. It is a loan program under which the allocation of expenditure between private beneficiary and taxpayer could be achieved either by adjusting the level of the tuition fees and thus the amount of the loan, or by uniform variations in the rates at which the loan would be repaid, the balance becoming a public charge. The plan could, of course, include provision for student assistance for room and board or foregone earnings. The scheme could be used to support part-time and older students who are continuing their education.

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(8) See the excellent study by Gail C.A. Cook and David A.A. Stager, Student Financial Assistance Programs. A report to the Ontario Committee on Student Awards. Institute for the Quantitative Analysis of Social and Economic Policy, University of Toronto, 1969. There is a large literature on this subject. Mention may be made particularly of Karl Shell, et al, The Educational Opportunity Bank: An Economic Analysis of a Contingent Repayment Loan Program for Higher Education. National Tax Journal, March, 1968.

The essential features of the plan might be outlined as follows:

1) As the regular commercial loan market is not suitable, there would be established by the government a lending institution (Educational Opportunity Bank) from which a student could if he wished, borrow sufficient funds to pay his educational expenses each year that he made satisfactory progress in his university program. The amount he could borrow would be determined by the level of tuition fees and other expenses for which he might be permitted to borrow. He would be independent of his parents and could attend the university of his choice, if acceptable to it.

2) Repayment would be by way of a surtax on future gross income at a rate stated at the time the loan was negotiated and for a stated period of time. The surtax would be collected in the same manner as the income tax and presumably, payment could be enforced in the same way. It should be noted that the amount paid would vary with the income and that the total period of payment would be specified.

3) There would be a release arrangement at an "opt-out" rate designated in advance. When equity payments equalled principal and interest at the "opt-out" rate no further payments would be required. This is to provide for the situation where a student earns a high income shortly after graduation.

4) In Canada, the Income-Related Assistance Program could be introduced in a province and made available only to provincial residents. However, to encourage mobility amongst students and to facilitate collection of repayments, a national scheme is much preferable to provincial schemes. The control of interest rates and the inflation effects of the plan would not be possible except under a national scheme. The fund could, in time, become self-liquidating.

5) In order to attain the objective of equality of opportunity for those interested in higher education it would be necessary to integrate with the loan scheme a system of grants or bursaries with a means test. There would be qualified persons whose financial situation and anticipated financial prospects are such that borrowing on a substantial scale is beyond their contemplation. One attractive option in this connection would be to provide bursaries in, say, the first year or two and loans in subsequent years of attendance.

There are, of course, problems. The collection of taxes from persons who have moved out of the tax jurisdiction, and the collection of taxes from women and men who earn no income are obvious problems for which not entirely satisfactory solutions have been proposed. There is also the major question of how large a debt students are willing to incur while at university.

The amount required by students would depend in part on the level of tuition fees.(9)

These considerations suggest the complex nature of the problem of the appropriate distribution of the financing of higher education between the state and the recipient. A crucial question is: what proportion of total cost should be paid by student fees? This could range from the present 20 per cent, or less, to 100 per cent. A second equally important question is: in what proportions should the public charge be divided between federal and provincial governments.

The following exercise is intended to do no more than illustrate some of the possibilities of distribution of the cost with their implications. It should be made clear that we are here concerned with university finance, not with student aid as such. The calculations are intended to show the cost implications to students and governments on the basis of the projections, of various assumptions respecting the level of fee income. The cost to the individual student is expressed as an over-all average and is not related to the cost of the particular programme or year-level. It is assumed that loans would be available on a long-term basis where necessary to finance the student's portion of the cost. Any attempt to relate the fee to the specific cost of the programme of study by year level would pose great difficulty with our present lack of knowledge of the distribution of costs.

The following tabulation illustrates the implications for government finance of universities and for the level of average student fees in 1967/68, if actual revenue had been derived from fees in various proportions between 100 per cent and 0 per cent. If 100 per cent of expenditures, over and above government grants for assisted research and grants by corporations, foundations and others for research and miscellaneous purposes, had been financed by fees charged to students, the average cost to the full-time equivalent student would have been about $1,962. At 25 per cent of cost fees would have averaged about $490.

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(9) David Riesman remarked that "by shifting some of the costs of higher education to the young and away from adult taxpayers, a plan like that of the Educational Opportunity Bank may, to some small degree, attenuate the tendency of the latter to want to repress students and institutions". *Op. cit.*, p. 11.

Hypothetical Distribution of Actual University Income, 1967/68

		($000,000)			Amt. of fee income and govt. grants ($000,000)	Average fee per full-time equiv. student $
Income:		740.6	Fee income:	100%	577.3	1,962.
Less:			Govt. grants:	nil	-	-
Federal grants for						
research	86.5		Fee income:	75%	433.0	1,472.
Other	76.8		Govt. grants:	25%	144.3	-
Total		163.3				
Balance to be			Fee income:	50%	288.7	981.
provided by			Govt. grants:	50%	288.7	-
fees and						
government grants		577.3	Fee income:	25%	144.3	490.
			Govt. grants:	75%	433.0	-
			Fee income:	nil	-	nil
			Govt. grants:	100%	577.3	-

By way of contrast, we present a similar tabulation for 1975/76 based on the projections of expenditure.

Projections of Expenditure and Hypothetical Distribution of Sources of Income, 1975/76

		Low ($000,000)		High ($000,000)
Projected Total Operating Expenditure		2,489.7		2,857.5
Less:				
Federal grants for assisted research	150.4		186.8	
Other	133.5		165.8	
Total		283.9		352.6
Balance to be provided by fees and governments:		2,205.8		2,504.9

		Low		High	
		Amt. of fee income and govt. grants ($000,000)	Average fee per full-time equiv. student ($)	Amt. of fee income and govt. grants ($000,000)	Average fee per full-time equiv. student ($)
Fee Income:	100%	2,205.8	3,491.	2,504.9	3,964.
Govt. grants:	nil	-	-	-	-
Fee Income:	75%	1,654.4	2,618.	1,878.7	2,973.
Govt. grants:	25%	551.4	-	626.2	-
Fee Income:	50%	1,102.9	1,745.	1,252.5	1,982.
Govt. grants:	50%	1,102.9	-	1,252.5	-
Fee Income:	25%	551.4	873.	626.2	991.
Govt. grants:	75%	1,654.4	-	1,878.7	-
Fee Income:	nil	-	-	-	-
Govt. grants:	100%	2,205.9	-	2,504.9	-

These figures are intended to illustrate the implications of using different fee income levels related to our expenditure projections for 1975/76 and the average impact of fee income differences upon students and governments, given our estimates and assuming fee income were charged at various percentages from 0 to 100 per cent of income other than income for assisted research and miscellaneous. The average would range between $3,491 and $873 or between $3,964 and $991 per full-time equivalent student in terms of the projections.

Capital Income and Expenditure

The sources and amounts of funds for capital purposes were as follows in the period 1961/62 to 1967/68:

Universities and Colleges of Canada
Capital Income 1961/62 to 1967/68 by Sources

	Federal Govt. Amount ($000,000)	%	Prov. Govts. Amount ($000,000)	%	Other (1) Amount ($000,000)	%	Long-Term Loans Amount ($000,000)	%	Total ($000,000)
1961/62	6.2	7.0	60.4	68.3	14.8	16.7	7.1	8.0	88.4
1962/63	7.1	5.8	77.7	63.1	21.0	17.1	17.2	14.0	123.1
1963/64	11.2	7.7	88.6	60.7	30.1	20.6	16.1	11.0	146.0
1964/65	8.8	4.1	123.6	57.4	43.8	20.3	39.3	18.2	215.5
1965/66	7.0	2.7	163.4	63.6	46.6	18.2	39.7	15.5	256.7
1966/67	11.2	3.5	193.0	61.1	53.1	16.8	58.5	18.5	315.8
1967/68	17.6	5.0	247.7	69.7	(2) 90.0	25.3	-	-	355.3

(1) Funds provided by corporations, foundations and others.
(2) Includes borrowing.
Source: D.B.S., Canadian Universities, Income and Expenditure 1964-65, 1965-66 1966-67 and D.B.S. Daily, October 21, 1969.

Universities over this period of time obtained some 75 per cent of their capital funds from provincial governments and long-term loans, usually guaranteed by provincial governments. The federal government, corporations and foundations have contributed relatively small proportions. We have no expectation of substantial change in this pattern so far as private sources are concerned. The provision of capital is at present relatively the most pressing need of the universities and the provinces are hard pressed to meet this need and the competing requirements for health, welfare, transportation, etc. The federal government has recently come to the assistance of the provinces through the health resources fund which it instituted to improve the health services of the country. An extension of this kind of assistance to meet other capital requirements, whether general or for specific purposes such as research, until the increase in enrolment slows down, would be salutary for provincial finance and would assist the universities to meet their obligations.

Conclusions

It will be recalled that in 1951 the Massey Commission described the financial crisis as "so grave as to threaten the future usefulness" of the universities. This was a crisis of quality which, as the Bladen Commission in 1965 remarked, "was temporarily and partially resolved" by the introduction of federal per capita grants directly to the universities. But, as the Commission pointed out, "a new crisis was developing, one of numbers... The new crisis involved quantity and quality."(10) This problem is with us today.

About 60 per cent of university operating revenue is provided by provincial and federal governments and about 25 per cent by student fees. About 80 per cent of capital income is provided by provincial governments and derived from long term loans, usually under provincial government guarantee. The projections indicate that by 1975/76 operating and capital expense together will have increased to about 2.4 times that of 1968/69 in terms of the lower projection and to about 3.0 times, in terms of the higher projection.

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(10) Bladen Commission Report, pp. 8, 9.

With anticipated increases in expenditure of this magnitude, the benefits of which are both private and social, with the necessary proliferation and duplication of university activities and with regional disparities in the tax bases and capacities to carry the costs of education, a re-assessment of the distribution of expenditure on higher education between governments and students and between federal and provincial governments is required without delay. Such re-assessment should establish guidelines by which the appropriate distribution could be determined. Benefits - public and private - of expenditures on education should be assessed and so far as possible quantified and compared in a broad way with the costs and benefits - public and private - derived from other major areas of expenditure. Rough though these measures may be, they would be useful as guidelines. This is a research project in which the Economic Council of Canada might assist.

The Bladen Commission Report has been referred to a number of times because it is a bench mark in the assessment of university needs and devices for meeting them. In view of the radical changes since 1965, it is time for a new study in depth of the financial requirements of universities and the means by which they may be met. This study would be a major undertaking and would require the co-operation of the universities and the federal and provincial governments and would benefit from the assistance of organizations such as the Economic Council of Canada. The following are some of the areas of concern which require study in depth:

1) the rôle and responsibilities of universities in contemporary Canadian society;

2) distribution of the financial costs and responsibilities as between governments and students and between federal and provincial governments and

the financial devices by which the desired distribution could be effected;

3) the degree of regional disparities in educational opportunities and appropriate devices for eliminating them;

4) universal accessibility and student support;

5) rôle of the federal authority in support of research, student mobility, graduate study and foreign students;

6) ways of achieving economies in university operations including the elimination of unnecessary proliferation, and the provincial, regional and national co-ordination of activities.

As such a study could well take two years the present transfer arrangement should be continued until 1973 to enable the results of the study to bear on the determination of any new financial arrangements.

VI Federal Support of Research in Universities and Colleges

We turn now to consideration of federal support of research in the universities and colleges of Canada and in this context we will be concerned primarily with support through the councils, the Canada Council, the Medical Research Council and the National Research Council, though we are aware that the "academic community" receives substantial federal support from government departments, crown corporations and other federal bodies as well as from the councils.

The research and development picture is complex and it is fortunate that we have the study(1) by Dr. John B. Macdonald and his colleagues which provides a wealth of information about and analysis of the federal government's rôle in the support of research in Canadian universities. The Study Group also made significant recommendations which deserve careful consideration.

The amount of federal expenditures on research in the "academic community" in 1967/68 was approximately $105.9 million made up of capital grants, operating grants, awards, research grants, research contracts and other(2) support.

The Macdonald Study Group found that of total federal government expenditure on scientific activities, excluding expenditure through National Research Council and Medical Research Council, in 1967/68, 76.2 per cent was intramural and 1.8 per cent was in educational institutions. The balance was in industrial (17.5 per cent) and miscellaneous (4.5 per cent) performance areas. In the same year, National Research Council expenditures (including medical research) alone were distributed 44.9 per cent intramurally, 51.1 per cent to universities and the balance to industry. The proportion allocated to universities had increased from 22.0 per cent in 1958/59.(3)

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(1) The Macdonald Study Group Report.

(2) Federal Expenditures on Research in the Academic Community. Education Support Branch, Department of the Secretary of State, 1968. The term "academic community" as defined in this document "includes post-secondary educational institutions, research organizations, and all associations, groups and individuals engaged in research activity". It, therefore, includes support beyond the university and college "community" but does not include expenditures for "in house" research undertaken by federal departments.

As the Macdonald Study Group pointed out there is little information about research expenditures in the humanities and the social sciences apart from the support provided by Canada Council and mission-oriented agencies of the federal government(4) to university personnel.

Table IV shows the income of Canadian universities and colleges for sponsored, assisted and contracted research for 1958/59 to 1967/68.

TABLE IV

Assisted Research Funds of Canadian Universities by Sources of Funds, 1958/59 to 1967/68

($000,000)

Source	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68
Fed. Govt.	-	-	-	16.8	18.7	22.7	27.3	36.6	52.1	71.2
Prov. Govt.	-	-	-	1.1	1.4	1.7	7.1	9.4	11.8	15.3
Corporations	-	-	-	1.1	1.3	2.0	2.6	2.7	2.7	2.8
Foundations	-	-	-	4.0	4.6	4.9	4.7	5.7	7.0	8.3
Other	-	-	-	3.5	4.7	5.5	5.9	7.1	7.1	6.5
Total	14.7	18.4	21.0	26.5	30.7	36.8	47.6	61.5	80.7	104.2

Source: Dominion Bureau of Statistics, Education Statistics Division

Federal contributions to research funds have ranged between 60 and 65 per cent of the total with provincial governments providing a substantial share of the balance. The total corporate contribution has in general been a relatively small proportion. The provincial proportion has increased substantially in the last four years. These figures do not represent the full real contribution of either the federal or provincial governments to university research. The research components in the operating expenditures of the universities, much of which is provided by the provincial governments and to which the federal government makes a contribution through the fiscal transfers are large. "The total provincial contribution constitutes almost half of the ordinary operating expenditures of the universities and is three and a half times as large as the assisted research funds received from the federal government"(5).

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(3) Macdonald Study Group Report, Tables 2:3 and 2:4, p. 26.
(4) *Op. cit.* p. 69; Table 4.7, pp. 81-83 and Appendix I.

The allocation of these funds amongst the major fields is very uneven. The Macdonald Study Group was able to provide some evidence of this on the basis of a survey of the sector distribution of research funds in six universities in 1966/67. The Study Group found that in those universities in 1966/67 most of the funds for assisted research went to the health sciences (44.0 per cent) the natural sciences (37.2 per cent) and engineering (11.3 per cent) - 92.5 per cent to these three sectors. Six and one-half per cent went to the social sciences and less than one per cent to the humanities.(6) This disparity does not reflect differences in the numbers of academics or graduate students in the different sectors as there are now more teachers and as many graduate students in the social sciences and humanities in Canadian universities as in the sciences and technologies.(7)

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(5) Op. cit. p. 32 and Table 3.8, p. 50.
(6) Op. cit. Table 3:5, p. 47. The universities surveyed were McGill, British Columbia, Manitoba, Western Ontario, Lakehead and Trent.
(7) See Table VI below.

The Science Council of Canada in its comments on the Report of the Macdonald Study Group made the following observations on research in universities:(8)

> The performance of research in universities is conditioned by the unique advantages that universities have, as well as by their special needs. Universities in Canada represent some of the largest concentrations of highly qualified research personnel and at the same time, they possess a coverage of disciplines found nowhere else in our society. As primary organizers of new knowledge, they are strategically placed to receive and to dispense the fruits of research. The special needs of universities are derived from their role in teaching the new generations of people and in training research personnel. The fulfilment of this role makes it essential that members of faculty remain at the forefront of knowledge in their disciplines while retaining the breadth required to organize and transmit new knowledge effectively. This makes it desirable that academics have latitude in the selection of projects for research. A second point which must be given special consideration in university research is the appropriateness of projects as a means of promoting graduate education.

The importance of universities in the development of the intellectual, cultural, social and economic life of Canada can hardly be over-emphasized. The research activities of university personnel in all branches of learning are means to these ends. Former Prime Minister Pearson pointed out to the federal-provincial conference in October 1966 that "...research, as the means by which we expand the frontier of knowledge, is today one of the most important factors in the economic and social growth of any modern political society... Failure by the federal government to play its full share in such a national task could only mean that Canada's ability to take part in the undertakings of today which are shaping the world of tomorrow would be seriously impaired."(9)

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(8) University Research and the Federal Government, Science Council of Canada, Report No. 5, (Ottawa: Queen's Printer, September 1969), pp. 3, 4.

(9) Report of the Federal-Provincial Conference, Ottawa, October 24-26, 1966. (Ottawa: Queen's Printer, 1968) pp. 19-20.

The importance of research is generally recognized. But is has not been adequately supported. The Bladen Commission pointed out in 1965 that while the case for increased funds for research in the experimental and health sciences had been made repeatedly "the increase in support has not kept up with the growth in the number of scientists at work or with the increasing cost of the more sophisticated equipment which they need or with the need for training more scientists." The Commission went on to say: "There has been little evidence of recognition of the gross inadequacy of the funds for research in the humanities and social sciences, perhaps because the economic yield is less obvious and less certain. The need here is very great if we are to play our part in the civilized world."(10)

The Commission, therefore, recommended immediate increases in the amounts available to the granting councils, with annual increments of 20 per cent each, and that all federal research grants to universities should carry a 30 per cent unconditional supplement for overhead. It was also recommended that a general sustaining grant for research be paid to each eligible university and that the Hall Commission recommendations in the health field be implemented.

Dr. Bladen reviewed the recommendations of the Commission in his submission to the Senate Committee on Science Policy(11) at which time he stated that he now believed the Commission had been much too conservative.

Table V shows the growth of the three Councils' support of research in Canadian universities from 1960/61 to 1969/70. It should be recalled that the government appropriation for each council for 1970/71 has been frozen at the 1969/70 level.

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(10) Bladen Commission Report, p. 75.

(11) The Senate of Canada, Proceedings of the Special Committee on Science Policy, March 13, 1968, p. 72.

TABLE V

Research Councils' Support of Research in Canadian Universities, 1960/61 to 1969/70 (1)

(Scholarships, Fellowships, Research Grants, etc.)

	1960/61		1961/62		1962/63		1963/64		1964/65		1965/66		1966/67		1967/68		1968/69		1969/70	
	$Mil	%	$Mil	%	$Mil	%	$Mil	%	$Mil	%	$Mil	%	$Mil	%	$Mil	%	$Mil	%	$Mil	%
National Research Council	7.2		8.9		10.7		12.8		17.4		22.1		34.6		45.8		59.3		65.0	
Medical Research Council	2.2		3.0		4.3		5.1		6.9		9.2		15.4		20.5		27.0		31.0	
Sub-Total	9.4	89.5	11.9	91.6	15.0	92.0	17.9	93.2	24.3	94.6	31.3	91.0	50.0	89.6	66.3	85.1	86.3	83.8	96.0	84.0
Canada Council (2)	1.1	10.5	1.1	8.5	1.3	8.0	1.3	6.8	1.4	5.4	3.1	9.0	5.8	10.4	11.6	14.9	(3) 16.6	16.2	(3) 18.4	16.0
Total	10.5		13.0		16.3		19.2		25.7		34.4		55.8		77.9		102.9		114.4	

(1) In addition, substantial federal support of research in the natural sciences, technologies and social sciences in universities and by university personnel is provided by government departments, agencies, etc. Very little support of research in the humanities is available from these sources.

(2) Humanities and Social Sciences only, (includes administration expenses).

(3) Includes grants from the Killam Fund: 1968/69 - $493,000; 1969/70 - about $600,000

Sources: University Research and the Federal Government, Report No. 5, Science Council of Canada, September, 1969, p. 5 and Canada Council Annual Reports

TABLE VI

Research Councils' Support of Research in Canadian Universities, the Number of Teachers in Canadian Universities and Support Per Capita in the Sciences and Technologies and in the Humanities and Social Sciences in 1960/61, 1963/64, 1965/66, 1967/68, 1968/69

	1960/61			1963/64			1965/66			1967/68			1968/69		
	Support $Mil	No of teachers	Support per cap	Support $Mil	No of teachers	Support per cap	Support $Mil	No of teachers	Support per cap	Support $Mil	No of teachers	Support per cap	Support $Mil	No of teachers	Support per cap
Science and Technology	9.4	3096	3036.	17.9	4144	4319.	31.3	5160	6065.	66.3	7100	9338.	86.3	8000	10,787.
Humanities and Social Sciences	1.1	2849	386.	1.3	4381	296.	3.1	6171	502.	11.6	8900	1303.	16.6	10000	1660.
Total	10.5	5945	1766.	19.2	8525	2252.	34.4	11331	3035.	77.9	16000	4868.	102.9	18000	5716.

Sources: Table V and A Report by The Canada Council: Growth and Characteristics of University Teaching Staff in the Social Sciences and the Humanities, 1956/57 to 1967/68.
Number of teachers estimated for 1968/69.

Table VI is an attempt to relate the magnitude of the funds available for research in the sciences and technologies and in the humanities and social sciences respectively to the magnitude of the constituency to be served in each sector. Two points must be made immediately: (1) These comparisons must not be interpreted as implying that support of research in the technologies and sciences should be reduced. In fact, quite the contrary is intended. (2) The number of teachers and the per capita support are approximations. It is impossible to obtain accurate figures of the numbers of instructors in Canadian universities.

The Bladen Commission recommendations of 1965, which Dr. Bladen said in 1968 were much too low, were not implemented. If they had been, by 1969/70 National Research Council would have had available for distribution $69.1 million instead of $65.0; Medical Research Council $34.6 million instead of $31.0 million;(12) and Canada Council would have had $25.9 million rather than $18.4 million.(13) If the Bladen recommendations were much too low, the actual must have been quite inadequate.

Table V reveals the relatively meagre support accorded to Canada Council to 1967/68. In that year and the following two years, government grants were increased substantially and enabled the Council to increase its support of the humanities and social sciences. This growth has now been terminated for the time being at a time when support is of vital importance to the Canadian society.

The disparity in the support of the sciences and technologies and of the humanities and social sciences shown in Tables V and VI does not in our view, represent the relative real importance of these major areas of research to the future of Canadian development in all aspects. The real cost of our failure to adequately support research and training of high level manpower in the human sciences can only be measured by our failure to attain a measure of human development commensurate with our level of material achievement.

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(12) In this connection it should be noted that the Health Resources Fund was established. The Bladen Commission recommended this in addition to supplying Medical Research Council with more funds.

(13) This figure includes money available from the Killam Fund.

The apparent attempt to correct the disparity by increasing the budget of each council by about the same percentage from 1968/69 to 1969/70 did not take account of the fact that federal support of research in the universities had reached a much higher level in the sciences and technologies than in the humanities and social sciences. Canada Council pointed out that about two-thirds of the potential researchers in the former receive support, whereas in the latter about one-tenth receive support.(14) This conclusion is reinforced by an examination of the relative rates of growth of the two research constituencies.(15) In the last decade, the number of university faculty members in the biological and physical sciences increased by about 150 per cent whereas in the humanities and social sciences the increase was about 250 per cent. The toal number in the latter disciplines now exceeds the number in the former, having surpassed it by 1965/66. In 1968/69 the Councils' support was $1,660 per faculty member in the humanities and social sciences and $10,780 per faculty member in the sciences and technologies.(16) Moreover, the number of graduate students in the former disciplines is at least equal to the number in the latter.

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(14) The Canada Council, 12th Annual Report, 1968-1969, p. 52.

(15) See Table VI.

(16) As indicated above these figures must be taken as approximations because of the inadequacy of the basic data.

The rapid increase in the number of academics is only one of the factors leading to the conviction that more research support is required. We know that the costs of research have increased drastically in recent years not only in the natural sciences and technologies but also in the social sciences and in some of the humanities. As researchers increase in number, and as research increases in complexity and depth, more and increasingly expensive library research collections are necessary and more sophisticated and costly equipment is required in research laboratories. Survey methods used by social scientists are costly; inter-disciplinary research projects now being undertaken in many fields require the funding of teams of researchers; both require staffs of assistants and facilities for recording and analysis: computer techniques are being used extensively; data banks and communications systems are necessary. It is impossible to produce precise figures on the cost of providing adequate facilities but it does involve many millions of dollars each year.

We must also point out that research in universities is fundamental to the output of the highly qualified manpower which is necessary for the prosecution of research in industry and government, in all relevant disciplines. While education to the doctoral level has advanced rapidly in the natural sciences and in engineering it still lags in the social sciences and humanities. Personnel with doctorates are still in heavy demand in some of the social sciences.

The National Research Council has evolved a system of development grants for which it now has $6.5 million. This is a type of institutional support of research which we believe should be increased and also made available in the humanities and social sciences through the Canada Council.

The advance of knowledge suffers and the effective pursuit of major national goals is inhibited by the lack of funds for financing institutional research projects. There are many potential research projects which are multidisciplinary and which involve combinations of researchers from some or all of the natural sciences, health sciences, engineering, social sciences and humanities. These require substantial sums of money in the form of grants to institutions. Some examples of such projects are transportation and communications, health care, northern studies, poverty, urbanization, pollution, the social consequences of automation and the use of leisure time, biculturalism. It is imperative that, in the study of problems affecting all or many facets of society, all the measurable effects on people of following a particular policy be brought into a cost-benefit analysis. Frequently, the material productivity consequences alone are considered relevant. This is no longer acceptable.

Therefore, much more is needed by way of support of projects to which universities as institutions become committed and will share in the financial obligation. The granting agencies should be encouraged to consult with the universities to determine areas of research which should be developed and supported in particular institutions.

One of the most urgent requirements for research support is the provision of adequate library materials and the buildings to house the collections and provide reader space. The many reports on university libraries all emphasize the deplorable lack of these resources for research. Estimates of the cost of raising these to an adequate standard even with regional coordination total hundreds of millions of dollars. In the projections of operating costs the total library operating component for the seven year period 1969/70 to 1975/76 is $256.5 million and $292.6 million, or an average of $36.6 million to $41.8 million per year, to serve research, graduate and undergraduate purposes and all other general library purposes. These estimates include nothing for capital. All evidence with which we are familiar indicates that these amounts are totally inadequate. Without some major support being provided on a continuing basis, Canada must accept mediocrity in much of our research effort.

To these estimates must be added the cost of a machine readable national union catalogue that is urgently needed to provide ready access to the scarce resources wherever they are located. This has been recommended by the Macdonald study group and the Committee of Presidents of the Universities of Ontario among others. This should be undertaken by the National Library. To make this service effective, a national communications network is needed to facilitate information transferral. The cost of a national union catalogue and a communications network are not included here.

The virtual impossibility of every university assembling adequate research collections both because of cost and the impossibility of securing much of the rare material has resulted in regional groups exploring ways of developing co-operatively research collections that can be used by all members of the region. An extension of this approach aimed at achieving a national library system is being explored actively by the Association of Universities and Colleges of Canada.

The Macdonald Study Group remarked that: "Research, an arm of university activity equal in importance to education, represents a clear federal interest (although not to the exclusion of the provinces)"(17): the Study Group forecast the average cost of buildings to be constructed for specific research functions from 1968/69 to 1974/75 as $117 million per year, including the cost of research libraries, and recommended the establishment of a federal research facilities corporation which would administer a research facilities fund supported by an annual federal vote having an initial level of $120 million per year.

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(17) Macdonald Study Group Report, p. 189

Support in all fields of research must be increased. There are no satisfactory devices by which the amount of the necessary increase can be estimated with precision. The researchers and graduate students in all fields are in the universities and their numbers are growing. As we indicated in Section II, full-time graduate enrolment increased from 4,600 in 1958/59 to 26,100 in 1968/69. It is expected to reach 66,200 by 1975/76. Total full-time faculty increased from about 5,300 in 1958/59 to about 18,000 in 1968/69 and is expected to rise to approximately 35,000 by 1975/76. It is in the interest of Canada that they be supported. The humanities and social science disciplines which were late starters are now taking root as a result of the recent years of growth in support by Canada Council. They must now be nourished in order that they may become strong. In another respect these disciplines require special nurture. Unlike research in the physical and life sciences, the findings of research in the human sciences in other countries are frequently inapplicable to Canada and cannot be borrowed. Therefore, in the social sciences and humanities we must find our own answers to our own problems.

In the AUCC Commentary to the Science Council of Canada and the Canada Council on the report of the Macdonald Study Group certain of the specific recommendations made therein were endorsed with the reservation that, since they have financial implications, they must be considered in relation to the totality of federal financial support including financing under the Federal-Provincial Fiscal Arrangements Act, 1967.

These proposals cannot be considered as alternatives to the present, or apart from some other overall financial arrangement for the support of the operating and capital requirements of the universities. This reservation is made for two reasons. The first is that the financial requirements of the universities will be so large that general support beyond the present amounts will be necessary and it is apparent that support for specified purposes cannot take its place. The second reason is that since the need for overall operating and capital resources relatively to the need for specific research support varies a great deal from one university to another, individual institutions, whose requirements are more largely in the general field, could be weakened by such a substitution. AUCC expressed the view that the granting agencies should consider, in addition to excellence, both potential excellence and the need for regional development as essential to the attainment of truly national development. It was also urged that, in view of the youth of many scholars today, granting agencies should be willing to take some risks in making grants to individual scholars.

VII Rationalization of University Activities: Achievements and Aspirations

The first annual review of the Committee of Presidents of Universities of Ontario (1967/68) was entitled "System Emerging". The second was called "Collective Autonomy". Those titles denote a development which is occurring in all Canadian provinces where there is more than one university or college. This is the emergence of provincial university systems. To a greater or lesser degree, co-ordination of university activities and co-operation amongst universities is a move to provide high quality education with more efficient use of resources by avoiding unnecessary duplication and proliferation of effort. A provincial university "system", even though loosely formed, provides an organization through which the universities may decide amongst themselves the location of highly specialized educational activities and specialized centres of excellence. This is what we mean by rationalization.

Co-ordination and co-operation amongst universities may occur provincially, regionally and nationally and may be directed to a variety of university activities and may involve combinations of institutions or parts of institutions. Specific examples are given in an Appendix to this section. The universities and the Association of Universities and Colleges of Canada recognizing the vast increase in financial resources required to satisfy the demand for higher education, as demonstrated in Sections III and IV are attempting to devise ways of ameliorating the financial impact on governments by provincial, regional and national plans of rationalization. If the universities do not rationalize their activities themselves, governments are certain to step in and university "autonomy" may come to have little significance.

The purpose of this section is to note the structures which have been established provincially and regionally to study common problems and to achieve some measure of co-operation amongst institutions and to give what evidence we can of what has been achieved. In this connection, we note the rôle of university (or post-secondary) grants committees, provincial and regional associations of universities and in the national field of the Association of Universities and Colleges of Canada. We note also some progress toward rationalization coming about outside the aegis of any of these organizations.

There are university, or post-secondary education, grants committees in all provinces but Saskatchewan and Newfoundland. There being only one university in each of these provinces, the university deals directly with the provincial government. The development of university "systems" has imposed on governments the necessity of creating bodies to stand between them and the university and to give advice as to the total financial requirements of the system and as to the allocation of funds amongst the institutions in the system. But in most cases, the committees have also been given power to persuade or induce universities in the province to co-operate to avoid unnecessary duplication, or to advise the government as to how this should be done. For example, the Alberta Universities Commission is given a mandate "to supervise and control the expansion of programs by a university in order to reduce or avoid unnecessary or undesirable duplication"; the University Grants Committee of Nova Scotia is empowered to advise the government as to ways and means by which duplication of courses and facilities may be eliminated without interfering with the independence of the universities or colleges and to advise the government as to possible areas of co-operation including the consolidation or integration of facilities. The terms of reference of most of the other committees include similar provisions. The committees are government appointed.

While most provincial governments have established these "buffers" between themselves and the universities (and have given them power to advise on or require co-operation to avoid duplication) some universities themselves have taken action through provincial and regional organizations to achieve similar ends. In general, the latter have been established to study and take positions on common problems. But they have also been acutely aware of the financial problem associated with the rapid increase in the demand for places and the burgeoning of research activity in the universities. These associations have, therefore, given consideration to ways and means of meeting these demands with the most economic use of resources.

The Atlantic Provinces

The Association of Atlantic Universities (AAU) was founded "to assist the co-ordination of higher education; to ensure high academic standards in a period of rising costs; and to avoid unnecessary duplication of facilities and courses of study."(1) The Atlantic Provinces Inter-University Committee on the Sciences (APICS) was established "to co-ordinate the development of research and teaching in the pure and applied sciences in the Atlantic Provinces; to promote co-operation between the faculty members in science and engineering and the various universities; and to contribute to the development and co-ordination of the scientific research efforts of the region."(2) APICS is now the Committee on the Sciences of AAU.

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(1) Higher Education in the Atlantic Provinces for the 1970's. A Study prepared under the auspices of the Association of Atlantic Universities for the Maritime Union Study, Halifax, December, 1969, p. 75. Most of the material on co-operation in the Atlantic Provinces has been drawn from this report.

(2) *Op. cit.*, p. 74.

While the Association of Atlantic Universities considers that many obstacles to co-operation have been removed and the achievements have been worthwhile, it maintains that, in spite of the objectives set out in the terms of reference, "the universities could have done much more. Too often, the solution of problems was left to outside initiative".(3)

Consequently, the association made several recommendations intended to materially extend the area of university co-operation. It was recommended that:

(1) the highest priority be given to implementation of the agreement, entered into in 1965, to co-operate in offering graduate studies, and to a continued search for more effective means of co-operation and co-ordination in all areas of higher education;

(2) AAU and APICS be made more effective instruments of co-operation and co-ordination by provision of qualified staff; and

(3) there be established one university grants committee to serve the three Maritime Provinces, whether political union is achieved or not.(4)

Quebec

The Conference of Rectors and Principals of Quebec Universities was incorporated under the Quebec Companies Act in May, 1967, though it had operated as a non-incorporated body from 1963. "Confronted with the political, social and cultural context of Quebec, members of the Conference have decided to continue to define the objectives and means of establishing... a system of Quebec universities."(5) This idea is carried forward in the title of the first annual report: Interdependence and Harmonization. Harmonization involves the study of common problems and action with respect to them to ensure co-ordination amongst the universities especially in research and in the universities' investment projects and fund-raising campaigns and to improve utilization of total resources and exchange ideas and experiences.

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(3) Op.cit.,p.77. Examples are cited of government intervention to bring about co-ordination.

(4) Some achievements in co-operation in each region are listed in the appendix to this section.

(5) First Annual Report, The Conference of Rectors and Principals of Quebec Universities, October, 1969, p. 9.

The conference operates through many committees, sub-committees and *ad hoc* committees many of them concerned directly with problems of co-ordination.(6) The conference is staffed both with secretariat and research personnel. While co-ordination is only now beginning, the programme of work laid out for the committees and secretariat is impressive and if carried through will achieve substantial co-ordination. Some of the details are given in the Appendix.

Ontario

The Committee of Presidents of Universities of Ontario has as its objects to promote co-operation among the provincially assisted universities of Ontario, and between them and the Government of the Province, and, generally, to work for the improvement of higher education for the people of Ontario. The committee is staffed by secretariat and research personnel. Like the corresponding Quebec organization, it operates through a large number of sub-committees.

Until recently the formal membership of the Committee of Presidents was the presidents of the 14 provincially assisted universities of Ontario, although for two years a colleague from each university had participated in meetings on an informal basis. One colleague from each university is now a full member along with the president; the colleague is chosen by the senior academic body of the institution. This move was taken as a result of lengthy discussion of various possible means to strengthen the collective voice of the universities by making the organization more representative of the university community as a whole.(7)

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(6) Appendix II to this section.

The Prairie Provinces

The Inter-Provincial Committee on University Rationalization (IPCUR) was formed by the Prairie Provinces Economic Council, consisting of the premiers of the three Prairie Provinces, several years ago. It is a joint government-university committee with fifteen members. The membership includes the presidents of the seven Prairie universities and the principals of the Saskatoon and Regina campuses of the University of Saskatchewan and two appointees of the Minister of Education of each province. Representatives of the universities of British Columbia frequently attend as observers. The committee now has a permanent secretary who will also direct studies relating to inter-university co-ordination amongst the Prairie universities.

The object of the committee is to rationalize programs in the Prairie universities. More specifically, within this broad mandate, the committee is charged with responsibility (1) to maintain information on programs offered and planned, (2) to provide continuing study of needs not being served by universities, and in particular those of advantage to the economic development of the region, (3) to make recommendations regarding sharing of teaching and research resources, (4) to study and report on the financial implications of inter-provincial university rationalization, (5) to make recommendations for the most economic and effective development of physical facilities for higher education, (6) to recommend ways in which the academic and cultural advancement of the Prairie Provinces may be advanced.

The committee is also charged with making recommendations respecting fee structures, salaries and other terms of employment, graduate and undergraduate loans, scholarships and bursaries and to provide for exchange of views on the impact of federal policies concerning university finance. The IPCUR terms of reference are promising. The achievements and projects are listed in the Appendix I.

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(7) Appendix III to this section.

British Columbia

In the Province of British Columbia, the Academic Board was established in 1963 "to collect, examine, and provide information relating to academic standards, and to advise the appropriate authorities on orderly academic development of universities" and "to report on any matters respecting academic standards and development in higher education as may be from time to time required by the Minister of Education". The universities and the government are represented on the Board.

Other Regional Initiatives

A number of initiatives have been taken by universities and provincial governments on a multilateral basis outside any formal regional organization. These are particularly important in the development of major research projects and new instructional units such as Veterinary Science. Examples of multilateral initiatives are cited in Appendix I to this Section.

The Association of Universities and Colleges of Canada

This review demonstrates that, provincially and regionally, Canadian universities have established structures for planning and implementing programs of rationalization of university activities and that already there is some record of planning and even implementation in some parts of the country. The Association of Universities and Colleges of Canada, while, like the other voluntary agencies, having no power to impose policies on its members, is endeavouring to achieve some degree of rationalization on a country-wide basis in various activities. A committee appointed by its Board of Directors has been working for some time, in co-operation with the National Library, on the problem of rationalization of university library resources and on the problems of library automation and transferral of information.

In January 1970, the Board of Directors of AUCC approved the establishment, within AUCC, of a New Learning Media Secretariat and a committee which would be advisory to the director. Representation on the committee would be drawn from the membership of AUCC, the Ontario Universities' Television Council, the Commission interuniversitaire des cours télévisés et radiodiffusés, and the regional university organizations. The purpose is to explore the use of the new learning media and to make information and advice available to universities and university organizations and particularly to achieve standardization of equipment in order that there may be more joint use of materials.

In view of the expansion and high cost of major research projects in universities the Association convened a meeting of representatives of university administrations, deans of graduate schools, the granting agencies and the learned societies to explore ways and means by which university co-ordination of such projects might be accomplished. Any progress in this direction could result in substantial economies in the use of resources and in increased efficiency in research efforts.

The Association is concerned about the lack of co-ordination in the soliciting, collecting and storing of information about universities - information about enrolments, scholarships and other awards, faculty, faculty salaries and fringe benefits and financial details. The universities find themselves bombarded with requests for the same information presented in different ways by many organizations, such as governments, granting agencies, research organizations, and individuals. The Association has for some years endeavoured to have the Dominion Bureau of Statistics accepted as the central collecting agency for basic statistics. This involves the establishment of standardized university reporting systems and willingness on the part of users of statistics to rely on the Dominion Bureau of Statistics for the information. This is only possible when the Bureau is equipped to collect and process the data expeditiously. Progress has already been substantial in the Bureau in this direction. AUCC itself acts increasingly as a clearing house for non-statistical information.

It was suggested in the recent study of student housing sponsored by the Association of Universities and Colleges of Canada that there might be considerable economies in the cost of food services by operating their own catering services and grouping together regionally, where possible, for bulk purchasing, since their total purchasing power would be considerable.(8)

The universities are conscious of the very heavy financial demands which the universities make on the federal and provincial treasuries. They recognize that they must practise economies internally and amongst them without sacrificing quality. The Association recognizes that co-operation and co-ordination of many university operations provincially, regionally and nationally is imperative. We have tried to demonstrate that this process is under way though we know there is much yet to be done.

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(8) Klein and Sears, Room to Learn, Ottawa, Association of Universities and Colleges of Canada, 1969, p. 35.

APPENDIX I

Some Achievements in Co-operation

(This is probably not a complete list. No attempt has been made to distinguish between voluntary and forced co-operation).

The Atlantic Provinces

1) Combination of institutions as in the Université de Moncton and the federation of St. Thomas University with the University of New Brunswick.

2) One school to serve the three Maritime Provinces in each of medicine, dentistry, social work, agriculture and forestry. There are two law schools and two schools of engineering for that region.

3) The proposed co-operative developments involving the Maritime School of Social Work, Mount St. Vincent University, the University of King's College, the Nova Scotia Technical College and Dalhousie University will provide more effective use of faculty, libraries and laboratories.

4) The union of St. Dunstan's University and Prince of Wales College to form the University of Prince Edward Island. The new university is limited to granting degrees below the master's level.

5) In 1965, the members of the Association of Atlantic Universities entered into an agreement of co-operation with respect to research and graduate studies in the Maritime provinces. It was agreed that unnecessary duplication would be avoided, the universities would arrange a suitable division of work amongst themselves for the master's degree and for doctoral studies the universities would co-operate with the existing graduate schools. It was understood that before launching doctoral programmes a university would consult with other institutions. It will be many years before the objectives of the members of the Association are fully achieved.

Quebec

As indicated in the text of this brief, the Conference of Rectors and Principals works through a large number of committees pertaining to academic matters and to other areas of higher education.

The Committee of Vice-Principals Academic Affairs is responsible for co-ordinating the activities of the various academic committees. Its mandate is to ensure co-ordination of teaching and research programmes among the faculties and departments of the Quebec universities; to promote and facilitate exchange of ideas, staff and students among the universities when collaboration on any teaching or research programme seems desirable.

The academic committees cover such other areas as law, regional summer schools, continuing education, teacher training, engineering, arts and literature, mathematics, medicine, music, philosophy, psychology, business administration, pure sciences, social sciences, social work and theology and divinity.

The Committee of Vice-Principals, academic affairs, has also prepared a graduate degree appraisals programme for Quebec universities, and has proposed a set of regulations for sabbatical leaves and leaves of absence, a standardized nomenclature for professors, and the standardization of degrees.

There are other inter-university committees; their range of concern is indicated by the following titles:

1. Audio-Visual and Programmed Teaching
2. Library Co-ordination
3. Documentation
4. Space Utilization
5. University Financing
6. Computing Science

7. General Secretaries and Registrars
8. Athletic Directors
9. Salaries
10. Student Affairs
11. Credit definition and equivalence (*ad hoc*)
12. Financing Policy for Graduate and Post-Graduate Students (*ad hoc*)
13. Water research consortium (*ad hoc*)
14. Animal care and provision for laboratories (*ad hoc*)

Other committees mostly "ad hoc" have equally been in operation.

A number of research projects bearing on such topics as faculty, salaries, manpower demand, cost benefits, enrolment projection, year-round operation, unemployment, etc. are being pursued by the secretariat of the Conference. Some of these projects have recently been completed, others are under way.

Ontario

1. Establishment of an appraisals procedure under the auspices of the Ontario Council on Graduate Studies, providing for evaluation and assessment of graduate programmes at the request of a university.

2. Planning is underway for an Ontario Universities' Bibliographic Centre, to provide a union list of serials, operate as a switching centre for inter-library lending, provide such centralized processing services as might prove feasible, and act as a source of consulting and information services in respect of library development. Ontario Centre planners are seeking to promote the expansion of national bibliographic services to a machine-readable union catalogue, and see the Ontario Centre serving as a regional link to such services.

3. The interuniversity library transit system was inaugurated in the autumn of 1967 to carry library materials from one university to another.

It now also transports library users. The Ontario transit has been linked recently with a similar system in Quebec.

4. Establishment of the Advisory Joint Council on the Co-ordination of University Library Research Facilities.

5. Establishment of the Ontario Universities Council on Admissions and the introduction of the common application form by applicants for admission to Ontario universities.

6. The Ontario Universities' Television Council was established to advise and assist universities in the development and use of television teaching in Ontario universities.

7. The sub-committee on Computer Services was set up to advise the Committee of Presidents on problems related to the development, co-ordination and financing of university computing services in Ontario. A Computer Coordination Group has been established, with full-time staff members, to develop detailed plans for furthering coordinated computing development. It has current or proposed projects in a number of areas, including computer charging, data communications, time sharing, system performance measurement and evaluation, video-taped lectures, a cooperative programme library, a technical information system, and a time sharing-information system based on a data bank of legal materials.

8. A library co-operative use agreement which gives faculty and graduate students in Ontario universities access to library resources across the province.

9. The request for new facilities in engineering education by Ontario universities, which was questioned by the Committee on University Affairs, led to a study of requirements. This is almost completed.

10. Plans are being made to set up machinery to examine university deve-

lopments by discipline, or discipline groupings, from a provincial planning perspective. The University of Toronto and York University, for example, have established a co-operative program in graduate studies in transport.

11. In agreement with the Committee on University Affairs, the Committee of Presidents will undertake an evaluation of the use of educational technology as a means of enhancing university-level education, including the examination of opportunities for co-operative efforts.

Prairie Provinces

1. The study of a Prairie bibliographic centre has been completed and steps are being taken to implement the plan. The plan is intended to increase accessibility and reduce duplication. A survey is in progress to identify areas of excellence in library collections.

2. A survey is being undertaken to identify areas of excellence in graduate studies with a view to co-operation.

3. Discussions were undertaken in the Committee as to the proper location of a second school of architecture in the Prairies and of a school of library science. It was agreed that two schools of architecture and one library school would meet the needs of the Prairie Provinces and it was agreed that one of each should be established in Alberta. Previously a similar agreement had been reached by the presidents of the universities that the College of Veterinary Science be established in Saskatchewan.

4. Matters such as the unequal distribution of foreign students and related costs and the finance of facilities in one province which serve the needs of all three are under discussion.

5. Studies of enrolment and cost projections are being made to determine needs and areas where duplication is unnecessary or undesirable for reasons of cost.

6. It has been accepted in principle that fee revenue should be a relatively constant proportion of revenue and that the present approximate equality of student fees amongst the provinces be preserved.

British Columbia

1. Joint use by faculty of the libraries of the University of British Columbia and Simon Fraser University has been established with a delivery system between them.

2. Use of the University of British Columbia Computing Centre has been extended to research personnel and faculty of Simon Fraser University and the University of Victoria. Consideration is being given to the installation of co-axial cable and remote terminals at both universities.

3. The departments of extension of the three universities meet regularly to attempt to avoid duplication of non-credit and diploma courses.

4. The registrars and directors of academic planning of the three universities meet regularly to pool information on curriculum developments, entrance requirements, enrolments, etc.

Other Regional Initiatives

1. The Huntsman Marine Laboratory. On the initiative of a few university professors, and with the co-operation of the Fisheries Research Board, the laboratory has been incorporated as a consortium of universities to establish a marine biology research station at St. Andrews, New Brunswick. The consortium will include as members or associate members many of the universities from Manitoba to Newfoundland. Ten universities have already become full members and there are nine associate members. The Fisheries Research Board is also a member. This establishment will provide a well-equipped central location for the study of marine biology on the Atlantic

coast by faculty and students from all the institutions making up the consortium.

2. There are several co-operative major research projects under way in western Canada.

(a) Tri-universities Meson Facility (TRIUMF). (The universities of British Columbia, Victoria and Alberta and Simon Fraser University.) The office and laboratory building is in operation. The building to house the cyclotron is underway. The project has been fully funded by the participating universities and the federal government.

(b) Western Canadian Universities Marine Biological Organization (WCUMBO). (The universities of British Columbia, Victoria, Calgary, Alberta and Simon Fraser University.) The construction is under discussion. Application for a major development grant has been made to N.R.C.

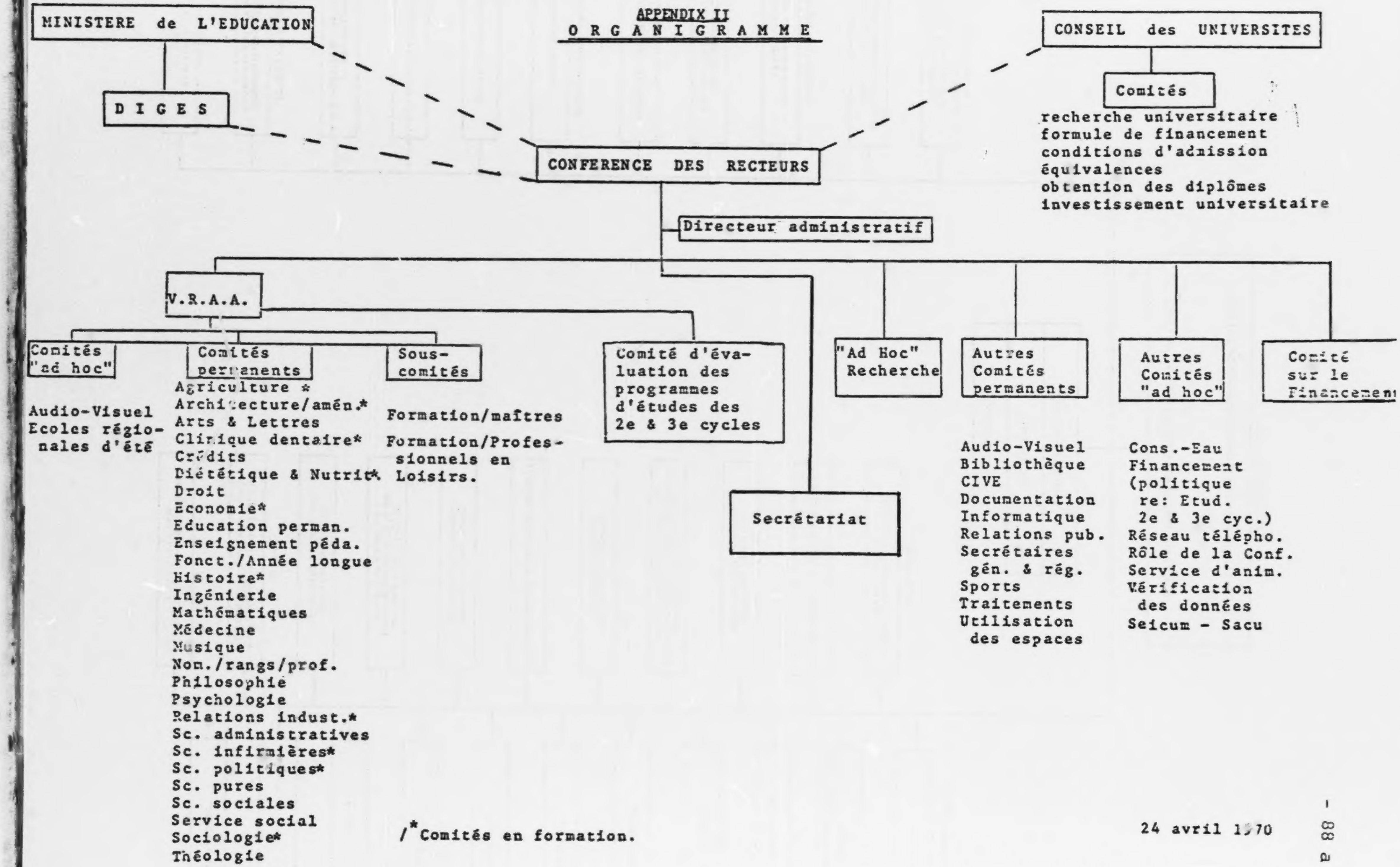
(c) Consortium of Western Universities for Astronomical Research (WESTAR). (The universities of British Columbia, Victoria, Alberta, Calgary, Lethbridge and Queen's University.) The constitution has been agreed on and the federal government has agreed to transfer the assets of the Mount Kobau project.

Each project is governed by a board of directors representative of the boards of governors of the co-operating universities. An operating committee administers the research centre and a large degree of autonomy in decision-making is accorded the committee. There is a great degree of flexibility in the arrangement of graduate programs in order that graduate students from a co-operating university may carry on research at a research centre and even under the direction of a faculty member of a university other than their own.

3. The four western provinces and their universities co-operated in the establishment of the College of Veterinary Science at the University of Saskatchewan.

APPENDIX II

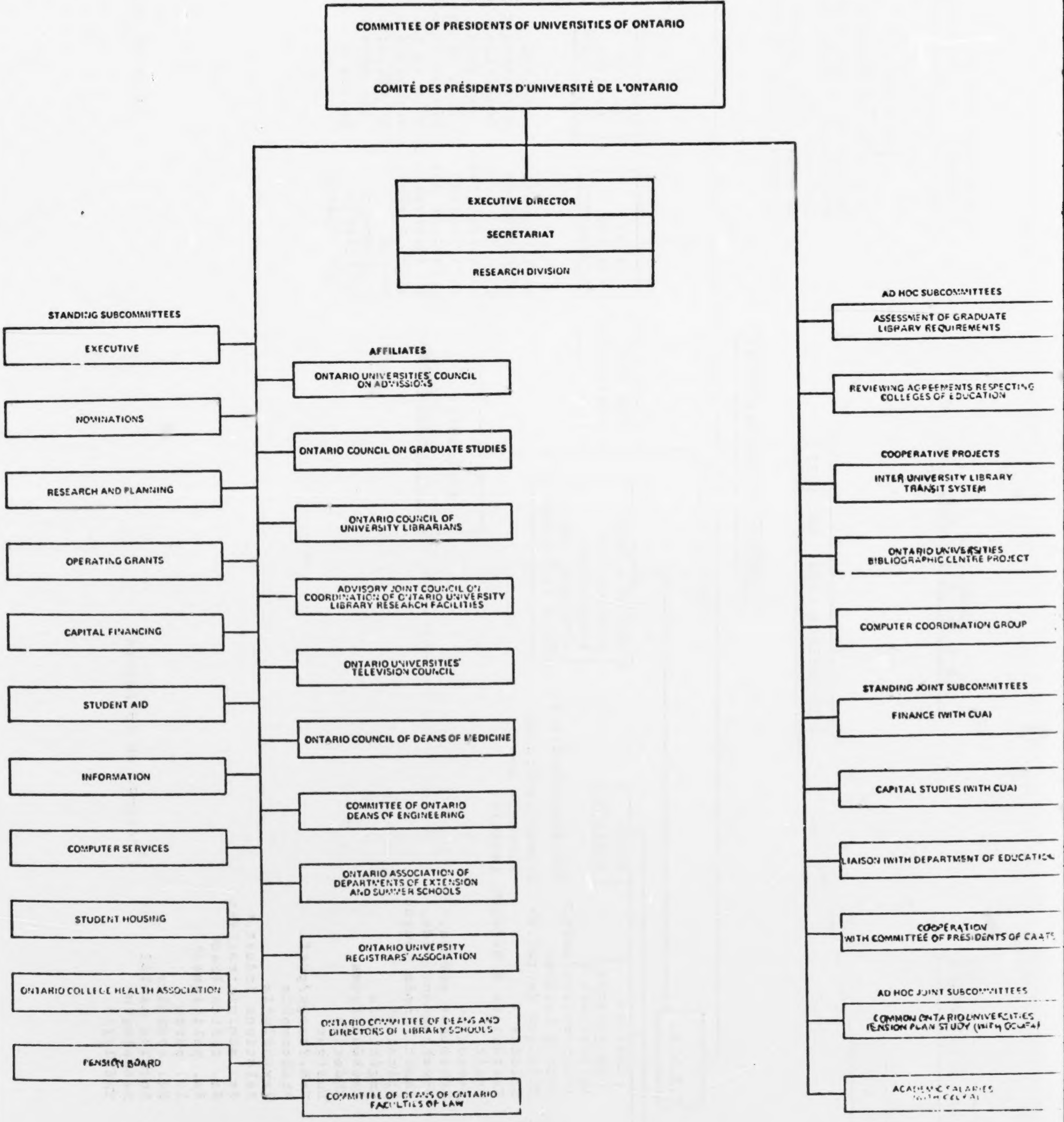
O R G A N I G R A M M E


MINISTERE de L'EDUCATION
D I G E S
CONSEIL des UNIVERSITES
Comités
recherche universitaire
formule de financement
conditions d'admission
équivalences
obtention des diplômes
investissement universitaire
CONFERENCE DES RECTEURS
Directeur administratif
V.R.A.A.
Comités "ad hoc"
Audio-Visuel
Ecoles régionales d'été
Comités permanents
Agriculture *
Architecture/amén.*
Arts & Lettres
Clinique dentaire*
Crédits
Diététique & Nutrit*
Droit
Economie*
Education perman.
Enseignement péda.
Fonct./Année longue
Histoire*
Ingénierie
Mathématiques
Médecine
Musique
Nom./rangs/prof.
Philosophie
Psychologie
Relations indust.*
Sc. administratives
Sc. infirmières*
Sc. politiques*
Sc. pures
Sc. sociales
Service social
Sociologie*
Théologie
Sous-comités
Formation/maîtres
Formation/Professionnels en Loisirs.
Comité d'évaluation des programmes d'études des 2e & 3e cycles
Secrétariat
"Ad Hoc" Recherche
Autres Comités permanents
Audio-Visuel
Bibliothèque
CIVE
Documentation
Informatique
Relations pub.
Secrétaires gén. & rég.
Sports
Traitements
Utilisation des espaces
Autres Comités "ad hoc"
Cons.-Eau
Financement (politique re: Etud. 2e & 3e cyc.)
Réseau télépho.
Rôle de la Conf.
Service d'anim.
Vérification des données
Seicum - Sacu
Comité sur le Financement

/*Comités en formation.

24 avril 1970

APPENDIX III


COMMITTEE OF PRESIDENTS OF UNIVERSITIES OF ONTARIO
COMITÉ DES PRÉSIDENTS D'UNIVERSITÉ DE L'ONTARIO
EXECUTIVE DIRECTOR
SECRETARIAT
RESEARCH DIVISION
STANDING SUBCOMMITTEES
EXECUTIVE
NOMINATIONS
RESEARCH AND PLANNING
OPERATING GRANTS
CAPITAL FINANCING
STUDENT AID
INFORMATION
COMPUTER SERVICES
STUDENT HOUSING
ONTARIO COLLEGE HEALTH ASSOCIATION
PENSION BOARD
AFFILIATES
ONTARIO UNIVERSITIES' COUNCIL ON ADMISSIONS
ONTARIO COUNCIL ON GRADUATE STUDIES
ONTARIO COUNCIL OF UNIVERSITY LIBRARIANS
ADVISORY JOINT COUNCIL ON COORDINATION OF ONTARIO UNIVERSITY LIBRARY RESEARCH FACILITIES
ONTARIO UNIVERSITIES' TELEVISION COUNCIL
ONTARIO COUNCIL OF DEANS OF MEDICINE
COMMITTEE OF ONTARIO DEANS OF ENGINEERING
ONTARIO ASSOCIATION OF DEPARTMENTS OF EXTENSION AND SUMMER SCHOOLS
ONTARIO UNIVERSITY REGISTRARS' ASSOCIATION
ONTARIO COMMITTEE OF DEANS AND DIRECTORS OF LIBRARY SCHOOLS
COMMITTEE OF DEANS OF ONTARIO FACULTIES OF LAW
AD HOC SUBCOMMITTEES
ASSESSMENT OF GRADUATE LIBRARY REQUIREMENTS
REVIEWING AGREEMENTS RESPECTING COLLEGES OF EDUCATION
COOPERATIVE PROJECTS
INTER UNIVERSITY LIBRARY TRANSIT SYSTEM
ONTARIO UNIVERSITIES BIBLIOGRAPHIC CENTRE PROJECT
COMPUTER COORDINATION GROUP
STANDING JOINT SUBCOMMITTEES
FINANCE (WITH CUA)
CAPITAL STUDIES (WITH CUA)
LIAISON (WITH DEPARTMENT OF EDUCATION
COOPERATION WITH COMMITTEE OF PRESIDENTS OF CAATS
AD HOC JOINT SUBCOMMITTEES
COMMON ONTARIO UNIVERSITIES PENSION PLAN STUDY (WITH OCUFA)
ACADEMIC SALARIES (WITH OCUFA)

VIII Organization at the Federal Level to Co-ordinate Total Research and Development Effort Supported by the Federal Government

The federal government expenditures on research and development in the academic community in 1967/68 amounted to $105.9 million. The "academic community" includes post-secondary educational institutions, research organizations and associations, groups and individuals engaged in research. This support came from the federal treasury by way of government departments, crown corporations and government appointed boards and the research councils. This support in 1967/68 consisted of capital grants: $20.3 million; operating grants: $27.3 million; awards: $19.8 million; research grants: $27.8 million; other $4.6 million.(1) Much of this went to universities and university personnel. In addition, the federal government has expended large sums of money on research and development within government departments and agencies - the so-called "in-house" research - and through royal commissions, task forces and inquiries and in the support of industrial research and development. The Organization for Economic Co-operation and Development reported that federal government science expenditure in 1967/68 amounted to $601.5 million.(2)

Federal support of research and development in universities, whether "mission-oriented" or "pure" is channelled through government departments and agencies, royal commissions, task forces and the research councils - Canada Council, Medical Research Council and National Research Council. We have noted also that research and development expenditures are made directly by departments, agencies of government and by National Research Council for

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(1) Federal Expenditures on Research in the Academic Community, Education Support Branch, Department of the Secretary of State, 1968.

(2) Organization for Economic Co-operation and Development, Review of National Science Policy: Canada, Paris, 1969. (Hereafter referred to as O.E.C.D., Canada, 1969.)

"in house" research. Medical Research Council is also empowered to undertake basic, applied and clinical research in the health sciences other than in public health but has not yet done so. National Research Council also makes grants to industry. In addition to funding research the three councils provide assistance for doctoral and post-doctoral studies. The amounts of money allocated to the councils are determined by the Treasury Board.

The government departments and agencies recommend to Cabinet as to projects and the funds required through their respective ministers. Frequently, there are departmental or inter-departmental committees, with or without outside membership, to advise on and plan the projects. Medical Research Council is required to advise the Minister of National Health and Welfare in respect of such matters relating to such research as the Minister may refer to the Council for its consideration.

Each research council reports to a different minister: Canada Council to the Secretary of State; Medical Research Council to the Minister of National Health and Welfare; National Research Council to the Chairman of the Committee of the Privy Council on Scientific and Industrial Research.

At the advisory level, apart from departmental, interdepartmental and similar committees, the major advisory bodies are the Economic Council of Canada, the Science Council of Canada and the Science Secretariat of the Privy Council.

The Economic Council of Canada is directed, not to elaborate the detailed terms of reference, to advise how Canada can achieve the highest possible levels of employment and efficient production, in order that the country may enjoy a high and consistent rate of economic growth and that all Canadians may share in rising living standards. The Council discharges its obligation to give advice by making in-depth "in-house" research into relevant economic problems the results of which are published, and the significant information, observations and conclusions are brought together in an Annual Review and by report to the Prime Minister.

The Science Council of Canada, which reports to the Prime Minister, is directed to assess in a comprehensive manner Canada's scientific and technological resources, requirements and potentialities and to make recommendations thereon to the Minister... The Science Council commissions studies and carries out research to discharge its advisory responsibilities.

The Science Secretariat is "the scientific arm of the Privy Council Office". "In the course of fulfilling its various functions, the secretariat has to identify the important scientific and technical issues relevant to national policy"(3). It provides information and advice on scientific matters on request by the Prime Minister, and the Cabinet and its Committees and participates in the determination of government priorities to the extent that scientific and technical input is relevant and organises and conducts special studies.

The co-ordination of all this advice in all areas of policy and decision-making is presumably at the Cabinet level.

Decisions as to the "mission-oriented" research activities and the allotments of funds for "pure" research which will be supported by the federal government, whether in the university community, government departments and agencies or industry appear to be made largely on an ad hoc basis without reference to an over-all policy except as this may be achieved by the Cabinet. The federal advisory and decision-making structure does not appear to provide the means of co-ordination of effort over the whole area of federal research and development and research support.

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(3) O.E.C.D., Canada, 1969, pp. 65, 66.

Universities should be expected to strive for optimum use of the resources devoted to higher education by planning and co-ordination of their activities. Similarly, rationalization of research and development and research support by the federal government should be expected in order to achieve optimum use of these resources. This involves the determination of national goals and co-ordinated planning by decision-making authorities based on advice of bodies equipped to give competent advice as to the relative importance to society of alternative uses of resources as well as to the technical aspects associated therewith.

This is an extremely complex matter as it involves consideration of all aspects of man in society. Mankind is the beneficiary of the results of research and development whether for good or ill. The knowledge of the natural scientist and technologist alone is not enough when all aspects of human life are involved. It is equally important that expertise in the humanities and social sciences be brought to bear on the determination of research and development support policy.

In a recent report issued by the Organization for Economic Cooperation and Development, it was stated: "Development can no longer be thought of simply in terms of investment and production and the establishment of priorities between different economic factors. All attempts at planning must take into account and evaluate social, political and cultural factors and reactions if they are not to precipitate the very incoherence they are intended to avoid. Development - and planning - has in the last analysis a social objective, and requires a system of values and criteria on the basis of which economic considerations and decisions can be weighed in the light of the human and social factors involved."(4)

We have said that national goals must be determined by the Cabinet, having received advice on all relevant matters. The present chaos surrounding the definition of national objectives is well illustrated in a tabulation entitled Possible Priorities and National Objectives in a recent report on Canada issued by the Organization for Economic Co-operation and Development.(5) One cannot quarrel with these "national goals" without appearing to deny the virtues of motherhood. And yet, no one has established that these are the goals which society really wants; nor, if they are what society wants, has anyone determined the relative social importance of them. There is no clear delineation of ends and means. Some of the so-called objectives are not objectives at all, but rather means to ends.

National objectives should be defined in relation to the totality of man's welfare within a social and political milieu and in relation to expanding man's knowledge of himself and his environment. Nevertheless, it is difficult to escape the conclusion that for the present advisory bodies the main thrust is technological to stimulate economic growth. There can be no objection to this in itself but it does reflect our failure to recognize that economic growth often has inflicted immense damage to our environment at great social cost. We often neglect the non-material factors in human welfare. Obvious examples are the industrial pollution of air and water and the dereliction of the city - some of the external diseconomies of economic growth.(6) One of the next may be the Mid-Canada Development Corridor. We are becoming very conscious of the high cost of repairing the ill-effects of economic growth but we make little attempt to anticipate the social costs of economic growth. Nor do we count these costs as part of the total cost in determining whether or not the contemplated development should be undertaken. Research into these matters should be an integral part of the federal research and research support program.

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(4) Organization for Economic Cooperation and Development, Ministerial Meeting on Science, The Social Sciences and the Policies of Government, Paris, 1966, pp. 18-19.

(5) O.E.C.D., Canada, 1969, p. 270.

(6) See E.J. Mishan, The Costs of Economic Growth, London, 1967 for an excellent analysis of the social costs of economic growth.

The universities are concerned that there is no national mechanism for achieving these objectives. There should be a mechanism at the highest national level to define and recommend national goals and priorities and the co-ordination of research and development and research support. This mechanism must include appropriate devices to channel advice to the decision-making body on all aspects of research and development policy from natural scientists, technologists, social scientists, humanists and the lay public. Co-ordination of national research and development efforts is not enough. There must in addition be close liaison with provincial governments and with industry.

Coordination could be best achieved through a federal minister (7) for research policy whose responsibility should be to assess and propose to the decision-making authority, in this case the Cabinet, as to national objectives and priorities and as to the federal funds required to achieve the desired goals. The office of the minister would need to be staffed by a secretariat with competence to assist the minister to evaluate proposals. All proposals involving the support of research, development and training of high-level manpower, whether coming from government departments or agencies of government, should be made to the government through the minister who would advise the Cabinet as to the appropriate action in the light of the established objectives and priorities.

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(7) The title "Minister for Science" is inappropriate as the connotation of the word "science" is too limited.

All available sources of expert advice should be exploited by the Minister. The importance of using the knowledge and experience of all disciplines in the planning and decision-making process was well expressed by the Economic Council of Canada:

> Moreover, a great many of our society's most perplexing problems require extensive co-operation between the social sciences and the natural sciences - and indeed the humanities as well - if appropriate and effective solutions are to be found. We therefore hope that in the future, social and natural scientists will work increasingly together so that 'there may grow alongside innovation and change the ability to anticipate and to plan ahead the resolution of the human problems associated with it'. (8)

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(8) Economic Council of Canada, Fifth Annual Review, (Ottawa: Queen's Printer, September 1968), p. 53.